JUNE 2001
ISSUE #487
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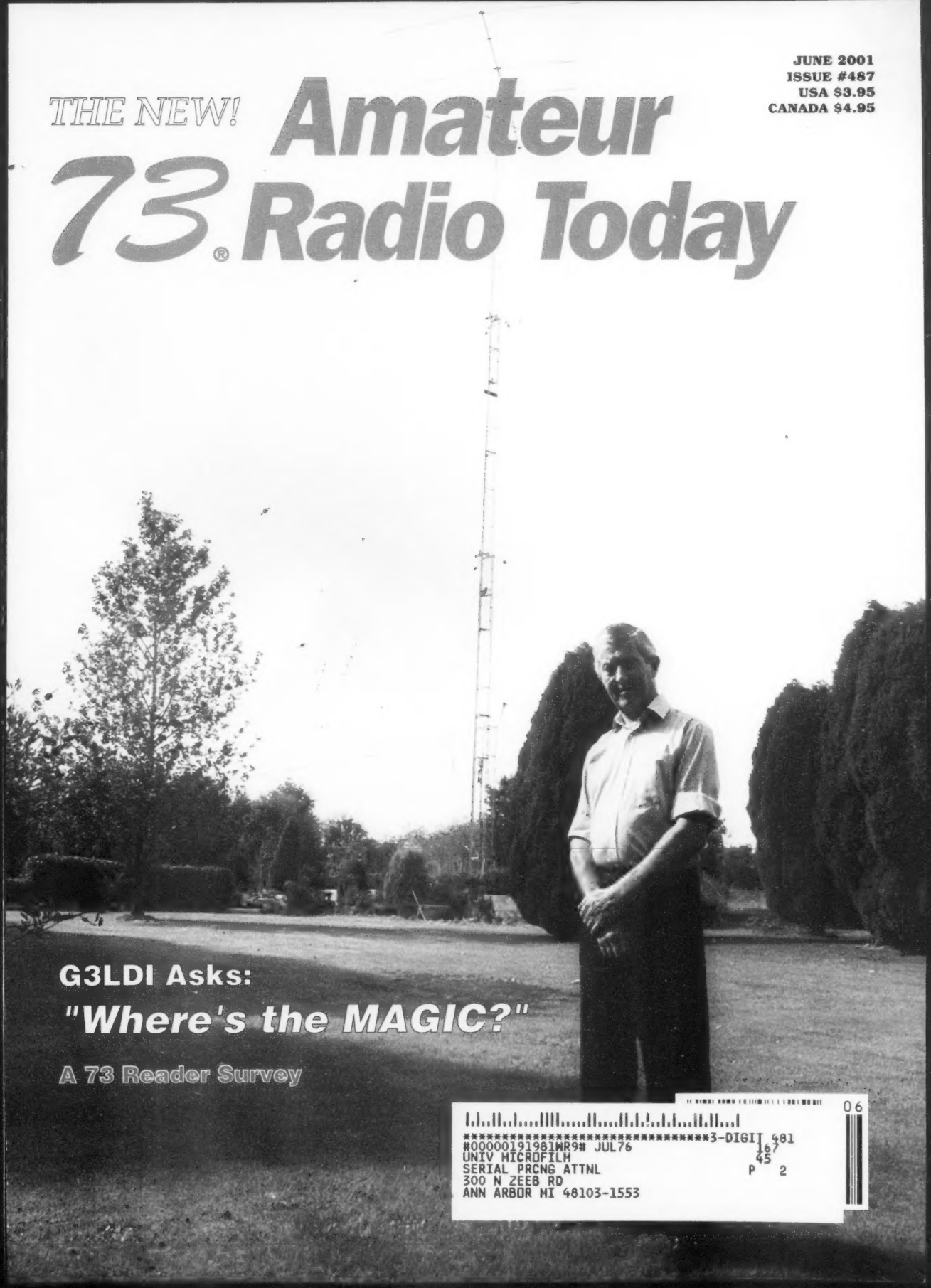
THE NEW!

73® Amateur Radio Today



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A 73 Reader Survey

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JUNE 2001
ISSUE #487

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THE NEW!

73 Amateur Radio Today

TABLE OF CONTENTS

FEATURES

10 **EZ-Build Preselector — N2DCH**
Use a tuning cap from an old broadcast receiver.

20 **Bring Back the Magic! — G3LDI**
Is this guy living in a dream world? YOU *tell* US.

24 **Read All About It! — K8JWR**
Part 7 of good stuff from The Hertzian Herald.

28 **The History of Ham Radio — W9CI, SK**
Part 6: Across the Atlantic.

32 **Field Day 2000 with the Xerox ARC — W6WTU**
Where every signal was — ahem! — easy to copy?

35 **Field Day Follies — K8JWR**
Wherein some Yankee feds and some Zulus use an x-ray machine to bust up an old man's still — or something like that.

36 **Radio Brat — W2GOM/7**
A life in uniform has meant a world of contacts for this devoted op.

52 **Hamfest Loser — K8JWR**
When you put your money in your shoe, anything can start to happen.

54 **Morse Code Decoder Chart — Byers**
Not *for taking the test.*

REVIEWS

13 **Kenwood's Hot New TS-2000 — Part 2 — N6NR**
Could YOU *handle all these features?*

18 **Up-'n'-at-'em Stealth Vertical — WB3CEH**
The Outreach 500 was the perfect solution for this ham.

DEPARTMENTS

49 **Ad Index**
64 **Barter 'n' Buy**
39 **Calendar Events**
41 **The Digital Port — KB7NO**
44 **Hamsats — W5ACM**
47 **Homing In — KØOV**
8 **Letters**
4 **Never Say Die — W2NSD/1**
46 **On the Go — KE8YN/Ø**
60 **Propagation — Gray**
1 **QRX**
63 **Radio Bookshop**

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For the Birds

As most television viewers have discovered by now, bird chirps and other natural sounds are often broadcast to fill the audio voids in golf tournaments. In fact, viewers have come to expect it.

Now, the *CGC Communicator* reports that bird call experts have recognized that some of those calls are not native to the regions of the tournaments. According to an unidentified Washington communications attorney,

Continued on page 6

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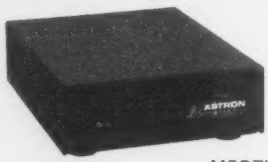

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SS-12	10	12	1⅜ x 6 x 9	3.4
SS-18	15	18	1⅜ x 6 x 9	3.6
SS-25	20	25	2⅛ x 7 x 9⅜	4.2
SS-30	25	30	3¼ x 7 x 9⅜	5.0

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MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SS-25M*	20	25	2⅛ x 7 x 9⅜	4.2
SS-30M*	25	30	3¼ x 7 x 9⅜	5.0

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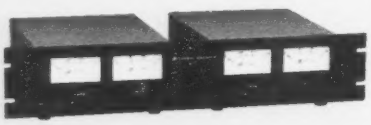
MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25	20	25	3½ x 19 x 9⅜	6.5
SRM-30	25	30	3½ x 19 x 9⅜	7.0

WITH SEPARATE VOLT & AMP METERS

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25M	20	25	3½ x 19 x 9⅜	6.5
SRM-30M	25	30	3½ x 19 x 9⅜	7.0



MODEL SRM-30M-2

2 ea SWITCHING POWER SUPPLIES ON ONE RACK PANEL

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25-2	20	25	3½ x 19 x 9⅜	10.5
SRM-30-2	25	30	3½ x 19 x 9⅜	11.0

WITH SEPARATE VOLT & AMP METERS

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25M-2	20	25	3½ x 19 x 9⅜	10.5
SRM-30M-2	25	30	3½ x 19 x 9⅜	11.0

MODEL SS-12SM/GTX

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GE MONOGRAM SERIES & MAXON SM-4000 SERIES
ICOM IC-F11020 & IC-F2020
KENWOOD TK760, 762, 840, 860, 940, 941
KENWOOD TK760H, 762H
MOTOROLA LOW POWER SM50, SM120, & GTX
MOTOROLA HIGH POWER SM50, SM120, & GTX
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UNIDEN SMH1525, SMU4525
VERTEX — FTL-1011, FT-1011, FT-2011, FT-7011

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SS-10GX, SS-12GX
SS-18GX
SS-12EFJ
SS-18EFJ
SS-10-EFJ-98, SS-12-EFJ-98, SS-18-EFJ-98
SS-12MC
SS-10MG, SS-12MG
SS-101F, SS-121F
SS-10TK
SS-12TK OR SS-18TK
SS-10SM/GTX
SS-10SM/GTX, SS-12SM/GTX, SS-18SM/GTX
SS-10RA
SS-12RA
SS-18RA
SS-10SMU, SS-12SMU, SS-18SMU
SS-10V, SS-12V, SS-18V

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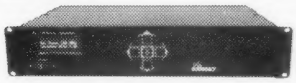

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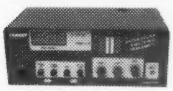
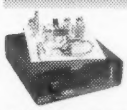


- Synthesized 88 to 108 MHz for no frequency drift !
- Built in mixer – 2 line inputs and one microphone input!
- Strappable for higher power output
- Low pass filter for great audio

Our FM100 is used all over the world by serious hobbyists as well as churches, drive in theaters, and schools. The kit includes metal case, whip antenna and built-in 110 volt AC power supply.

FM100	**Super-Pro FM Stereo Radio Station Kit**	**$249.95**
FM100WT	**1 Watt, Wired Export Version**	**$399.95**

FM STEREO RADIO TRANSMITTER



Great entry level FM broadcast kit. Thousands in use. Handy for sending music through house and yard, ideal for school projects too – you'll be amazed at the exceptional audio quality! Runs on 9V battery or 5 to 15 VDC. Add matching case and whip antenna set for great pro look.

FM10A	**Tunable FM Stereo Transmitter Kit**	**$34.95**
CFM	**Matching Case and Antenna Set**	**$14.95**
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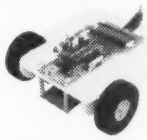
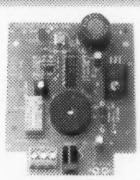
CARPET ROVER II ROBOT KIT



This advanced kit is an 8 x 8" differentially steered base that is excellent for carpet or tiled floor experimentation. It uses the Next Step microcontroller, a BASIC Stamp 2 controller that can use the BS2 or BS2-E (sold separately). A host PC is required to download programs to the robot. This complete kit includes the Rover, programming cable, IR proximity detector, bumper switch kit, and line follower kit.

RK3000 **Carpet Rover II Complete Kit** **$185.00**

COMBUSTIBLE GAS DETECTOR KIT



Build this kit and detect combustible gases and vapors including natural gas, gasoline, propane, and dozens more. Model GLD1000 is a local alarm only, GLD1010 includes a relay to control external alarms.

GLD1000		**$29.95**
GLD1010		**$39.95**

BUILD YOUR OWN STEREO!

We've got the kit! Our K4500 is a synthesized FM stereo tuner, the K4100 is a matching pre-amp. Both are fully digitally controlled with an optional IR remote control (kit also). Add our K4020 2 x 155W Class A power amplifier kit to complete your drop-dead stereo. We also have tube amplifier kits. Visit us on the web, or request our new catalog for more information.

K4500	**Synthesized FM Stereo Tuner Kit**	**$399.99**
K4100	**Digital Preamp Kit**	**$399.99**
K4101	**IR Remote Control Kit**	**$69.95**
K4020	**Solid State 310W Power Amp Kit**	**$499.99**

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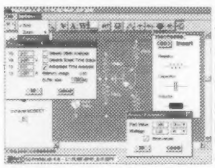

Priced for the hobbyist!

You can create and test AC and DC circuits minutes after installing this package on your PC. Start from scratch, or from the included library of pre-designed circuits. Drag and drop placement from a complete list of active and passive components. Test using a complete list of virtual instruments, Oscilloscope, voltmeter, ohmmeter, ammeter, and watt meter.

PLAB4 **$49.95**

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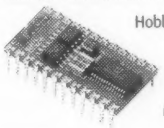


Hobbyists and educators have embraced the Basic Stamp family of microcontrollers thanks to their power, ease of programming and simple interface. Ramsey now offers popular BS boards, kits, and trainers. If you've been wanting to learn microcontrollers, or build them into a project, now's the time!

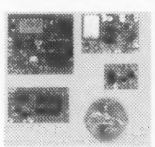
BS1IC	**Basic Stamp I Module**	**$34.00**
BS2IC	**Basic Stamp II Module**	**$49.00**
27205	**Basic Stamp 1 Starter Kit**	**$109.00**
28150	**Board of Education Full Kit**	**$109.00**

MINI-KITS

These are easy to build kits that can be used either stand alone or as building blocks for more complex projects.

BN9	**Super Snoop 2W Audio Amp**	**$8.95**
MB1	**Mad Blaster 15W Warble Alarm**	**$4.95**
TS1	**Touch Switch**	**$6.95**
SA7	**RF Broadband Preamp +20 dB**	**$14.95**
TT7	**Touch Tone Decoder**	**$29.95**

RF WIRELESS LINK MODULES



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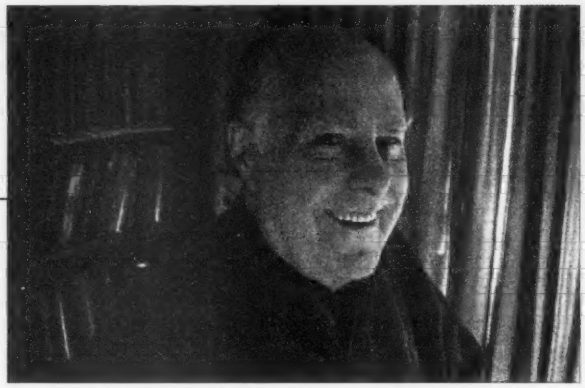

Me, a Cash Cow?

Yeah, yeah, yeah ... I know summer's upon us and it's time to get outside — if you're that type. But allow me to let you in on a little secret: While everyone else is out mowing the lawn or staying inside to waste their time surfing the Net, you could be firing up the old word processor and whipping off an article for *73* about your latest ham project, or experience, or new product purchase, or ... do I have to spell *everything* out for you?

As thousands of Everyman hams — NOT professional writers — have found out over the years, we pay CASH for your efforts. You couldn't use a couple extra hundred — not to mention the fame? So, call Joyce today at 800-274-7373 and ask for our *How to Write for 73* guidelines. Or — hell — just send it.

Economic downturn? We sneer at it. You can, too.

Lake Wobe...

Hey, guys, let's get on the stick! I'm having a great time swapping pictures with K9TRG, WA3YQY, and others via E-mail — so when are you going to send me some articles on how to send JPEG stuff on the ham bands? And I don't mean by slow scan.

Well, it's been a busy month in Lake Wobe... I mean Peterborough. The Fox TV show on the NASA Moon hoax, aired February 15th and March 21st, sure got that controversy stirred up. The only newspaper coverage I've seen so far was a *USA Today* piece by Michael Medved, who clearly had done zero homework on the subject before writing, lowering him even further in credibility with me than his lame movie reviews on PBS had.

More Moon Madness

If you'll check out www.lauralee.com and download her interview with Bart Sibrel, you'll find out why he says he'll bet his life that the Apollo Moon missions were all faked. He makes a very strong case.

I'd heard about Gus Grissom letting the press take a picture of the Apollo capsule with a big lemon he'd picked from his back yard hanging over it just days before he, Chaffee, and White were incinerated in it. I knew Gus had been critical of the program, but I didn't know that he had submitted a report to NASA shortly before his death citing the many major problems he saw, and how far the subcontractors were behind in their developments. This report, of course, has disappeared.

Getting reliable information on the radiation in the Van Allen Belt has been most frustrating. It seems to be highly classified for some reason, with NASA sitting tightly on it. The best information I've been able to get puts this 25,000-mile-thick belt at radiation about a hundred times that of an X-ray machine. You know, the ones where you have to wear a lead apron and where the doctor or dentist leaves the room entirely. How'd you like to spend 90 minutes in that environment?

Bart pointed out that even though the stars have been reported by astronauts in near Earth orbit to be incredibly bright, not one photo supposedly taken on the Moon was made of the stars. None! And, even more remarkable, not one photo of the Earth was taken during any of the early missions.

And how come they never took even a small telescope so they could take some pictures without the Earth's atmosphere? This was years before the Hubble and those photos could have been very valuable to astronomers.

Oh, yes, the Hubble. You remember the problems they had with that one, and that was just sent up to near Earth orbit.

I didn't know before that Armstrong has never given an interview to anyone since that flight. And ditto Collins. And I hadn't heard about astronaut James Erwin who, soon after becoming a born again Christian, called Bill Kaysing and made an appointment to meet him in three days and tell him the whole story. Two days later he was dead of a heart attack.

Bart was also made suspicious when he found some unreleased photos where objects just a few feet apart cast shadows that faced 90° apart. He was also surprised when he got hold of a video made in near Earth orbit with the astronauts clearly trying to fake pictures of Earth as they might look from much further out in space. The strange deaths connected with the Apollo flights — eleven astronauts within 20 months just before the missions, journalist Baron, astronaut Erwin, NASA spokesman Welch — should raise a red flag for anyone not in deep, deep denial — or a government disinformation agent.

Download the interview from lauralee.com — it's only an hour — and listen for yourself.

More Moon

The DVD version of *A Funny Thing Happened On the Way to the Moon* came in from amazon.com. ($33, with s/h). This 47-minute video is, overall, crappy. Bart Sibrel wrote, produced, and directed it. Phooey. Yes, it has some fine Moon stuff, but Bart wasted a lot of time with political statements — pictures of starving children in Africa, and so on, none of which had anything to do with NASA's Moon hoax.

His resistance piece was some NASA film that was not to be released to the public where Armstrong and Aldrin are in orbit around the Earth taking pictures of the Earth as it would look from halfway to the Moon. The soundtrack picked up their discussion of exactly what they were doing. They managed the effect by putting the camera at the opposite side of the blacked out capsule. The round port made the nearby Earth look like it was a small ball instead of filling the sky. The clouds hid the Earth's features, so it looked like the real thing.

Sibrel also mentioned that he had supposedly been given access by NASA to all of the Apollo 11 trip photos, (man's first landing on the Moon), yet there were only 24 photos! So what happened to the thousands claimed to have been taken?

Continued on page 58

Big Savings on Radio Scanners

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Size: 7 5/8" Wide x 6 15/16" Deep x 2 13/16" High

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The Bearcat 780XLT has 500 channels and the widest frequency coverage of any Bearcat scanner ever. Packed with features such as Trunktracker III to cover EDACS, Motorola and EF Johnson systems, control channel only mode to allow you to automatically trunk certain systems by simply programming the control channel, S.A.M.E. weather alert, full-frequency display & backlit controls, built-in CTCSS/DCS to assign analog and digital subaudible tone codes to a specific frequency in memory, PC Control with RS232 port, Beep Alert, Record function, VFO control, menu-driven design, total channel control and much more. Our CEI package deal includes telescopic antenna, AC adapter, cigarette ligher cord, DC cord, mobile mounting bracket with screws, owner's manual, trunking frequency guide and one-year limited Uniden factory warranty. For maximum scanning enjoyment, order magnetic mount antenna part number ANTMMBNC for $29.95; The BC780XLT comes with AC adapter, telescopic antenna, owner's manual and one year limited Uniden warranty. Not compatible with AGEIS, ASTRO or ESAS systems. For fastest delivery, order on-line at www.usascan.com.

Bearcat® 895XLT Trunk Tracker

Mfg. suggested list price $499.95

Less -$320 Instant Rebate / Special $179.95

300 Channels • 10 banks • Built-in CTCSS • S Meter

Size: 10 1/2" Wide x 7 1/2" Deep x 3 3/8" High

Frequency Coverage: 29.000-54.000 MHz., 108.000-174 MHz., 216.000-512.000 MHz., 806.000-823.995 MHz., 849.0125-868.995 MHz., 894.0125-956.000 MHz.

The Bearcat 895XLT is superb for intercepting trunked communications transmissions with features like TurboScan™ to search VHF channels at 100 steps per second. This base and mobile scanner is also ideal for intelligence professionals because it has a Signal Strength Meter, RS232C Port to allow computer-control of your scanner via optional hardware and 30 trunking channel indicator annunciators to show you real-time trunking activity for an entire trunking system. Other features include Auto Store - Automatically stores all active frequencies within the specified bank(s). Auto Recording - Lets you record channel activity from the scanner onto a tape recorder. CTCSS Tone Board (Continuous Tone Control Squelch System) allows the squelch to be broken during scanning only when a correct CTCSS tone is received. For maximum scanning enjoyment, order the following optional accessories: PS001 Cigarette lighter power cord for temporary operation from your vehicle's cigarette lighter $14.95; PS002 DC power cord - enables permanent operation from your vehicle's fuse box $14.95; MB001 Mobile mounting bracket $14.95; EX711 External speaker with mounting bracket & 10 feet of cable with plug attached $19.95. The BC895XLT comes with AC adapter, telescopic antenna, owner's manual and one year limited Uniden warranty. Not compatible with AGEIS, ASTRO, EDACS, ESAS or LTR systems.

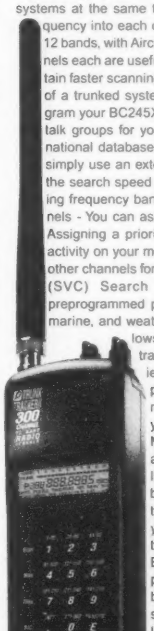
Bearcat® 245XLT Trunk Tracker II

Mfg. suggested list price $429.95/**CEI price $189.95**

300 Channels • 10 banks • Trunk Scan and Scan Lists
Trunk Lockout • Trunk Delay • Cloning Capability
10 Priority Channels • Programmed Service Search
Size: 2 1/2" Wide x 1 3/4" Deep x 6" High

Frequency Coverage:
29.000-54.000 MHz., 108-174 MHz., 406-512 MHz., 806-823.995 MHz., 849.0125-868.995 MHz., 894.0125-956.000 MHz.

Our Bearcat TrunkTracker BC245XLT, is the world's first scanner designed to track Motorola Type I, Type II, Hybrid, SMARTNET, PRIVACY PLUS and EDACS® analog trunking systems on any band. Now, follow UHF High Band, UHF 800/900 MHz trunked public safety and public service systems just as if conventional two-way communications were used. Our scanner offers many new benefits such as Multi-Track - Track more than one trunking system at a time and scan conventional and trunked systems at the same time. 300 Channels - Program one frequency into each channel. 12 Bands, 10 Banks - Includes 12 bands, with Aircraft and 800 MHz. 10 banks with 30 channels each are useful for storing similar frequencies to maintain faster scanning cycles or for storing all the frequencies of a trunked system. Smart Scanner - Automatically program your BC245XLT with all the frequencies and trunking talk groups for your local area by accessing the Bearcat national database with your PC. If you do not have a PC simply use an external modem. Turbo Search - Increases the search speed to 300 steps per second when monitoring frequency bands with 5 KHz. steps. 10 Priority Channels - You can assign one priority channel in each bank. Assigning a priority channel allows you to keep track of activity on your most important channels while monitoring other channels for transmissions. Preprogrammed Service (SVC) Search - Allows you to toggle through preprogrammed police, fire/emergency, railroad, aircraft, marine, and weather frequencies. Unique Data Skip - Allows your scanner to skip unwanted data transmissions and reduces unwanted birdies. Memory Backup - If the battery completely discharges or if power is disconnected, the frequencies programmed in your scanner are retained in memory. Manual Channel Access - Go directly to any channel. LCD Back Light - An LCD light remains on for 15 seconds when the back light key is pressed. Autolight - Automatically turns the backlight on when your scanner stops on a transmission. Battery Save - In manual mode, the BC245XLT automatically reduces its power requirements to extend the battery's charge. Attenuator - Reduces the signal strength to help prevent signal overload. The BC245XLT also works as a conventional scanner. Now it's easy to continuously monitor many radio conversations even though the message is switching frequencies. The BC245XLT comes with AC adapter, one rechargeable long life ni-cad battery pack, belt clip, flexible rubber antenna, earphone, RS232C cable, Trunk Tracker frequency guide, owner's manual and one year limited Uniden warranty. Not compatible with AGEIS, ASTRO, ESAS or LTR systems. Hear more action on your radio scanner today. Order on-line at www.usascan.com for quick delivery.



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Bearcat 278CLT 100 ch. AM/FM/SAME WX alert scanner	$159.95
Bearcat 245XLT 300 ch. Trunktracker II handheld scanner	$189.95
Bearcat 248CLT 50 ch. base AM/FM/weather alert scanner	$89.95
Bearcat Sportcat 200 alpha handheld sports scanner	$169.95
Bearcat Sportcat 180B handheld sports scanner	$149.95
Bearcat 80XLT 50 channel handheld scanner	$99.95
Bearcat 60XLT 30 channel handheld scanner	$74.95
Bearcat BCT7 information mobile scanner	$139.95
AOR AR8200 Mark II Wide Band handheld scanner	$539.95
AOR AR16BQ Wide Band scanner with quick charger	$209.95
ICOM ICR8500 wideband communications receiver	$1,469.95
ICOM PCR1000 computer communications receiver	$379.95
ICOM R10 handheld wideband communications receiver	$279.95
Uniden WX100 Weather Alert with S.A.M.E. feature	$49.95

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AOR® AR8200 Mark IIB Radio Scanner

AOR8200 Mark IIB-A wideband handheld scanner/**SPECIAL $539.95**

1,000 Channels • 20 banks • 50 Select Scan Channels
PASS channels: 50 per search bank + 50 for VFO search
Frequency step programmable in multiples of 50 Hz.
Size: 2 1/2" Wide x 1 3/8" Deep x 6 1/8" High

Frequency Coverage:
500 KHz to 823.995 MHz, 849.0125-868.955 MHz, 894.0125-2,040.000 MHz
(Full coverage receivers available for export and FCC approved users.)

The AOR AR8200 Mark IIB is the ideal handheld radio scanner for communications professionals. It features all mode receive: WFM, NFM, SFM (Super Narrow FM), WAM, AM, NAM (wide, standard, narrow AM), USB, LSB & CW. Super narrow FM plus Wide and Narrow AM in addition to the standard modes. The AR8200 also has a versatile multi-function band scope with save trace facility, twin frequency readout with bar signal meter, battery save feature with battery low legend, separate controls for volume and squelch, arrow four way side rocker with separate main tuning dial, configuarable keypad beep/illumination and LCD contrast, write protect and keypad lock, programmable scan and search including LINK, FREE, DELAY, AUDIO, LEVEL, MODE, computer socket fitted for control, clone and record, Flash-ROM no battery required memory, true carrier re-insertion in SSB modes, RF preselection of mid VHF bands, Detachable MW bar aerial. Tuning steps are programmable in multiples of 50 Hz in all modes, 8.33 KHz airband step correctly supported, Step-adjust, frequency offset, AFC, Noise limited & attenuator, Wide and Narrow AM in addition to the standard modes. For maximum scanning pleasure, you can add one of the following optional slot cards to this scanner: CT8200 CTCSS squelch & search decoder $89.95; EM8200 External 4,000 channel backup memory, 160 search banks. $69.95; RU8200 about 20 seconds chip based recording and playback $69.95; TE8200 256 step tone eliminator $59.95. In addition, two leads are available for use with the option socket. CC8200 PC control lead with CD Rom programming software $109.95; CR8200 tape recording lead $59.95. Includes 4 1,000 mAh AA ni-cad batteries, charger, cigar lead, whip aerial, MW bar antenna, belt hook, strap and one year limited AOR warranty. Enter your order now at http://www.usascan.com.

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continued from page 1

the network, which also remains nameless, now admits that prerecorded out-of-area bird calls have been used during some golf tournaments. In fact, some video crews say that they try to attract real birds by placing seeds close to a microphone, but that scheme has yet to yield satisfactory results. Or at least that is what they claim.

But some viewers know the difference, so score one for an educated and attentive audience.

Thanks to CGC Communicator, *via* Newsline, *Bill Pasternak WA6ITF, editor.*

Restructuring: FCC Says No More

The FCC has declined to make any significant changes to the way it implemented Amateur Radio "restructuring" last April. The Commission has turned down several requests for changes in the Amateur Service rules contained in five petitions for partial reconsideration of its Report and Order WT Docket 98-143, released December 30, 1999. The ARRL was among the petitioners.

In a Memorandum Opinion and Order released April 6, the FCC by and large denied all petitions for changes to its restructuring order — although it did claim to grant one ARRL request — and it made some minor housekeeping changes to the amateur rules.

Among the issues was a request from the ARRL and other petitioners that the FCC continue to maintain records that indicate whether a Technician licensee has Morse code element credit. The FCC noted that its current Universal Licensing System software was modified to display a "P" (for Plus) in the field that indicates former license class when a Technician Plus class license is renewed.

"This capability results in the amateur service database being able to provide a de facto Technician Plus licensee database," the FCC asserted in its MO&O. The FCC did not address how its database will distinguish current Technician licensees who subsequently earn Morse code credit. Those licensees have only a Certificate of Completion of Examination which will never be reflected in the database, even upon license renewal.

The FCC also decided to not extend Element 1 credit to all past licensees who had ever earned it — something else the ARRL had asked for. Under current rules, the holder of an expired Novice or a pre-February 14, 1991, Technician license can get Element 1 credit. The FCC said that "most examinees" who ever held a General, Advanced, or Amateur Extra ticket also once held a Novice or a pre-February 14, 1991, Technician ticket that grants Element 1 credit.

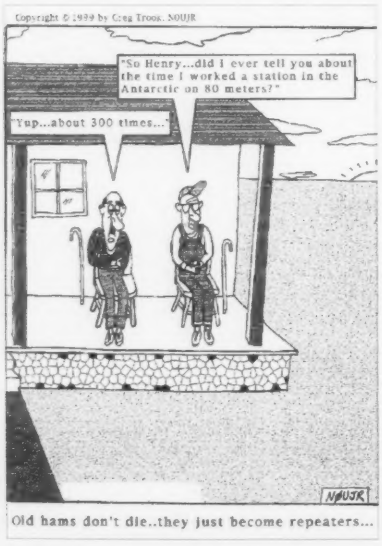
Left out in the cold by the FCC's decision is anyone who went directly to Conditional or General class without ever holding a Novice ticket. The FCC also declined to extend permanent credit to Element 1 CSCEs held by Technicians to obtain HF privileges. These CSCEs are good for 365 days for upgrading purposes but confer only additional operating privileges for Technicians beyond that time.

The FCC refused to reinstate the 20 wpm Morse code exam for Extra. The FCC said that since restructuring went into effect nearly a year ago, "there does not appear to be any decline in the proper operation of amateur stations." The FCC also declined to ban the practice of allowing applicants to retake a failed examination element at a single test session simply by paying a second fee to the VE team. And the Commission did not go along with requests to set the total number of questions at 50 for the Technician and General class test and at 100 for the Amateur Extra test.

The FCC also declined to make any changes — at least for now — in the arrangement of mode-related amateur radio subbands, as some petitioners had requested. The FCC said it believed it should let the amateur community "reach a consensus regarding a comprehensive restructuring of operating privileges for all licensees" before making any changes.

At this point those people who had petitions denied have the option of appealing before the full Commission. If the Commissioners refuse to hear a petition request or deny one after it is heard, the next step would be the federal courts.

Thanks to Brennan Price N4QX, and the ARRL, via Newsline, *Bill Pasternak WA6ITF, editor.*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"So Henry...did I ever tell you about the time I worked a station in the Antarctic on 80 meters?"
"Yup...about 300 times..."
N0UJR

Old hams don't die..they just become repeaters...

New Digital Mode

A newly created digital mode could make it possible for hams to span the globe on bands like 136 kilohertz. In fact, it's already happened between the UK and North America.

Following recent successes with transmitting extremely slow Morse across the Atlantic on the 136 kHz band, the feat has been repeated using a BPSK data mode. The mode — known as "WOLF", which stands for Weak-signal Operation at Low Frequency — was created by Stewart Nelson KK7KA, and claims to have the weak-signal performance of slow CW without the very long transmission times needed for that mode.

On the 19th of March at 0145, the WOLF signals of MØBMU were successfully decoded by W1TAG. This was only the first occasion that this mode had been used in Europe, though low-frequency experimenters in the USA and Canada had been reporting recordbreaking results for some weeks.

It is likely that WOLF will lead to more LF trans-Atlantic crossings because the reduced transmission times allow advantage to be taken of much shorter propagation peaks than was previously possible.

To learn more about the Weak Signal Operation at Low Frequency, or WOLF, communications, take your Web browser to [www.scgroup.com/ham/wolf.html].

Thanks to Jeremy Boot G4NJH, via Newsline, Bill Pasternak WA6ITF, editor.

Water Alert

We all know that water is important, but have you seen it written down like this before? 75% of Americans are chronically dehydrated (and likely applies to half the world's population).

In 37% of Americans, the thirst mechanism is so weak that it is often mistaken for hunger. Even *mild* dehydration will slow down your metabolism as much as 3%.

One glass of water shut down midnight hunger pangs for almost 100% of the dieters studied in a University of Washington study. Lack of water is the #1 trigger of daytime fatigue. Preliminary research indicates that 8–10 glasses of water a day could significantly ease back and joint pain for up to 80% of sufferers.

A mere 2% drop in body water can trigger fuzzy short-term memory, trouble with basic math, and difficulty focusing on the computer screen or on a printed page. Drinking 5 glasses of water daily decreases the risk of colon cancer by 45% — plus, it can slash the risk of breast cancer by 79%, and you are 50% less likely to develop bladder cancer.

Are you drinking the amount of water you should?

From the Internet.

Continued on page 58

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LETTERS

From the Ham Shack

Brenda Bennett, RR4, Spencerville, ON K0E 1X0, Canada. Carl Bennett VA3LGO became a silent key on January 27, 2001, at the age of 18. Carl received his ticket at the age of 12, with the Iroquois Amateur Radio Club. He was thrilled at getting his license and becoming involved. Carl had an interest in electronics from quite an early age, and always had a number of projects on the go. He looked forward to receiving *The Canadian Amateur* and *73*.

Following Carl's death, we learned that it is more than likely that he suffered from Fetal Alcohol Syndrome/Effects. A number of years ago, Carl told me that he wanted his life to make a difference. Since his death, I believe his legacy to us is to share with others the effects that alcohol and/or drugs can have on an unborn child — the effects of which that child will carry with them and suffer for the rest of his/her life.

Thank you to the Iroquois Club and to all the operators who became his friends through this wonderful hobby.

I'm not sure if it is normal practice for "In Memoriam" letters to be printed, but we did want to let all hams know how much Carl enjoyed being one of them. From Carl, 73 — and thanks!

Ronald W. Bissett W1SWV. I first got my ticket (amateur radio license) in 1948, when I was 17 years old. We had a lot of fun building equipment and communicating with each other, and checking to see how each change we made to our gear either improved or degraded the quality of our transmitted signal. We converted World War II surplus gear to get on new bands with higher power. It was a hobby that was exciting and held the pleasure of accomplishment. I unfortunately let my ticket expire around 1968 because of personal problems. Recently, and with the encouragement of my wife, I took the FCC exams over again and achieved Extra class amateur status. I subscribed to *QST* and ordered what I thought was The Radio Amateur's Handbook (1999), but to my surprise, what I got was the ARRL's Handbook for Radio Amateurs. Somehow the radio amateurs ended up taking second place to the ARRL?? Give us a break, please. Radio amateurs made the ARRL.

I looked through the handbook and I thought to myself, "Where are all the amateur radio transmitter projects that used to be in this great publication?" ... none were found ... save a few QRP items and a high power final amplifier. What a disappointment, to say the least. I wanted to send the handbook back as a publication that did not fulfill my expectations, but I didn't have any, and one is better than none.

QST soon arrived ... what a disappointment it turned out to be ... over what it used to be. Month after month, all I saw were lots of articles of product reviews of their advertisers, too many pages devoted to DX contests and very few worthwhile projects for the "hands on" radio amateur. A sad demise to the real hobby that used to be amateur radio.

I purchased several other ARRL publications and I noticed that a good many of their published articles (which you pay for) refer you to another one of their publications (which you must pay for again) in order to get some specifics on the original article. This is a poor business tactic used to generate additional revenue while treating the radio amateurs like they are a cash cow for ARRL purposes.

There are many of you who will have a different opinion than mine and I will respect that, but I think the real radio amateurs are interested in exploring rather than being led into the belief that buying is better than building. The only thing you learn when you buy completed equipment is how to operate it, but when you build something, you learn ALL about it.

Think about it ... radio amateurs are indeed unique people and should not be treated like cattle being brought to market.

I do not propose to tell you what to do ... but I sure hope you decide to do something different than what has been going on over the years that I have been away from the hobby. And if by some chance you are truly satisfied with things, then you will allow Status Quo to prevail.

Thank you for allowing me the opportunity to express myself.

Daniel NØBN. Since I am interested in ham radio history, I was pleased to see mention of a ham radio history reflector in "QRX" on pages 6 and 61 of your March issue.

I subscribed, but there appears to be nothing about ham radio history on the site: It seems like an unorganized chat room where people periodically send messages and say "What's going on here?" and "I just upgraded." I unsubscribed.

Just thought you might like to know.

I note, however, that the historical treatment of ham radio from the '30s, "Two Hundred Meters On Down," appears to be for sale on the ARRL site. I had thought it was out of print.

The most snow in decades in New England might lead the skeptical to suspect the validity of the frantic global warming cries. This letter from geologist Jack Sauers is relevant.

Jack Sauers, geologist, 6240-5th NW, Seattle WA 98107. Due to the heat island effect, and some slight ocean warming, related to the solar retrograde cycles, and oscillating El Niños and La Niñas, those in the cities of North America believe, as a result of much propaganda, that there's anthropogenic warming, and from their point of view, the natural cycles that have controlled the climate in the past, are of little importance.

This has lead to an arrogance amongst environmentalists, and a smug complacency, that nature no longer has an effect on their lives, and a "Save the Earth Theology or Religion" and a control over the newspaper and television media in the US and many other places in the world. A power struggle has resulted, and a tie in American Politics from this fixation and syndrome.

The powerful 150–180 year solar retrograde cycle of the climate that produced a top in both annual and summer temperatures in the middle part of the Twentieth Century, and a decline since in the better onland weather stations I have studied, has been found to be present for many repetitions in GISP2 drill cores, as well as those in Antarctic cores in oxygen isotope temperature data, sea core data, as well as tree ring data, in California redwoods, oaks in Europe, as well as cedars in Japan.

That Interdisciplinary Climate data on the dominating natural cycles is superimposed on longer natural cycles of solar and orbital cycles of about 20,000, 40,000, and 100,000 years, that will not be rescinded by nature, no matter how much pontificating is present by the self-appointed divinity of the anthropogenic or global warming aristocracy.

Continued on page 57

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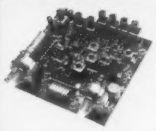

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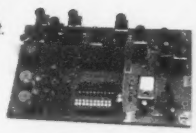

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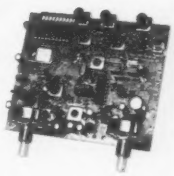

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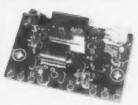

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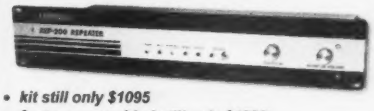

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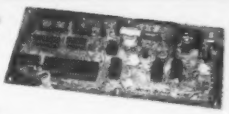

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EZ-Build Preselector

Use a tuning cap from an old broadcast receiver.

The price of new variable capacitors is so high that recycling is now very attractive. High-quality tuning capacitors like the one shown in ***Photo A*** *can be found in old AM and AM-FM radios. This one came from an old Zenith set and has a double ball bearing on the front.*

Restoring the capacitor involved removing it from the radio. A string-driven drum was unfastened from the drive shaft. The bearings were dry so a drop of household oil (3-in-One) was applied to the front and rear bearings. And dust was wiped off the frame (not the plates).

So what can you use it for? Well, most AM tuning capacitors have about a 300–400 pF maximum capacitance and close spacing, so high-voltage applications are out. This one also had a second section of smaller plates. I decided to build a preselector using it as the main tuning element.

What is the tuning range?

A quick way to check the tuning range is with the circuit shown in **Fig. 1**. The capacitor is connected in series with a powder iron toroid and a 51 ohm resistor. An MFJ SWR analyzer is then connected and tuned for minimum SWR. Take a reading with the capacitor plates fully meshed and again with them fully opened. These two readings will give you the frequency ratio for that capacitor. For AM capacitors, it should be about 3:1, because they had to tune 540–1600 kHz (the AM band is now 530–1710 kHz, but back when the capacitor was made, it was 540–1600). So, 1600/540 = 2.96.

The back section on my capacitor had a measured ratio of about 4:1, and the smaller front section measured 2.5:1.

With these figures, I decided my preselector would cover the entire high frequency spectrum from 1.5 to 30 MHz in three bands. The smaller capacitor section is used for the highest frequencies, and the back capacitor for two lower bands. A rotary switch and three powder iron toroid cores are all that is needed.

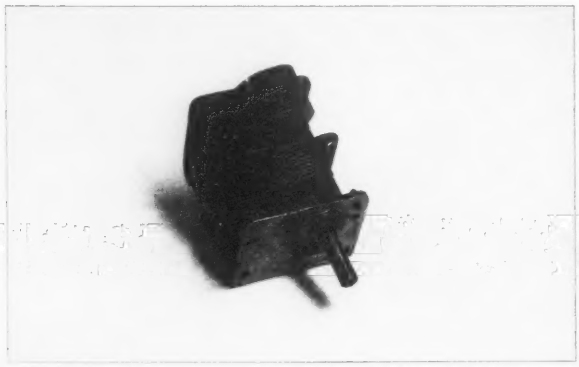

Photo A. *Tuning capacitor rescued from an old AM-FM radio.*

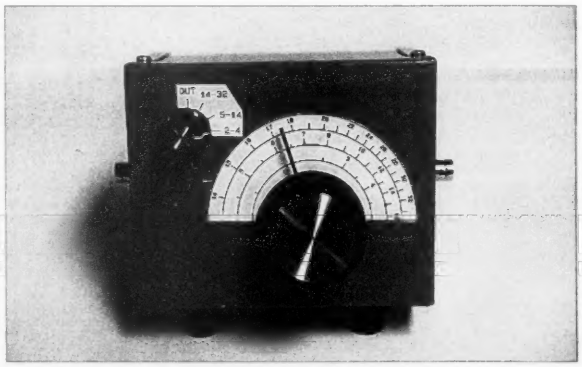

Photo B. *Completed preselector.*

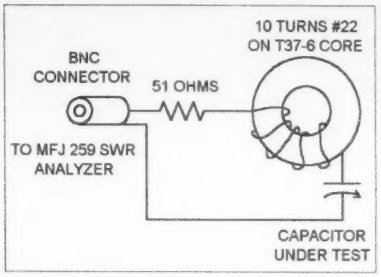

Fig. 1. Circuit to check tuning range.

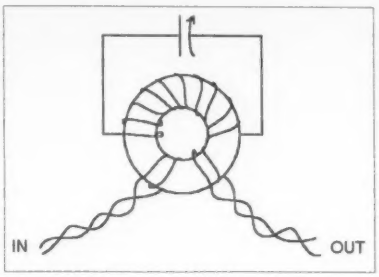

Fig. 2. Basic preselector circuit.

The preselector

A preselector works by passing frequencies near its resonant frequency and rejecting others. This is just what is needed at the front end of a receiver to knock down those strong out-of-band signals, which can otherwise get into a receiver mixer circuit. Those signals cause intermodulation signals to appear within the band you are listening to, often drowning out the signals you want to hear.

Fig. 2 shows the basic circuit for a preselector. A powder iron toroid coil of the proper inductance is wound to allow the capacitor to tune the desired range. It's important to use an inductor with a high Q so that the passband, the range of frequencies passed by the preselector, will be narrow. Table 1 gives the details for the three inductors chosen. Note that according to Micrometals data, a T44-10 toroid provides a higher Q than a T68-10 in the 14–32 MHz range.

You may want to select other coils depending on the characteristics of your "rescued" tuning capacitor and the frequency ranges you want to cover. The values in **Table 1** serve as a good starting point. **Fig. 3** shows the complete circuit for the three-band preselector.

Construction

All the parts should be mounted in an appropriate-size shielded enclosure. **Photo B** shows the completed project. I used BNC connectors, a 3 pole 4 position rotary switch, the tuning capacitor, and the 3 toroids of **Table 1**. The enclosure is an aluminum box 5"x4"x3". The two higher-frequency toroid coils are self-supporting by the stiffness of the windings. However, the lowest frequency coil (L1) must be mounted. I suggest a single nylon 6-32 screw, washer, and nut through the center, mounting it on a short piece of G-10 printed circuit board insulator. The circuit board is then mounted to an enclosure wall with a short piece of 1/2-inch aluminum angle stock.

Calibration

A large pointer knob and a calibration scale as shown are very helpful in the approximate setting and identifying of frequencies. Use a signal generator and RF voltmeter to calibrate the preselector. A temporary scale such as shown in **Photo C** can be used to take initial readings, and then a more final scale can be drawn and mounted.

Photo D shows the calibration setup I used. An MFJ 259 SWR analyzer is used as a signal generator, followed by

Preselector Inductors

	Frequency Range	Core	Turns	Inductance µH	Q	Link (each)
L1	1.5–5	T68-2	72T #30	30	230	5T #26
L2	4.5–15	T68-6	25T #22	2.5	280	2T #22
L3	14–32	T44-10	13T #20	0.7	170	2T #22

Table 1. Inductor details.

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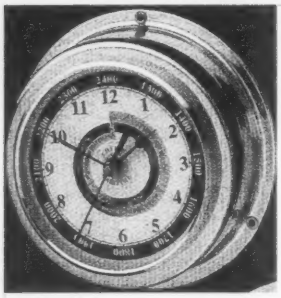

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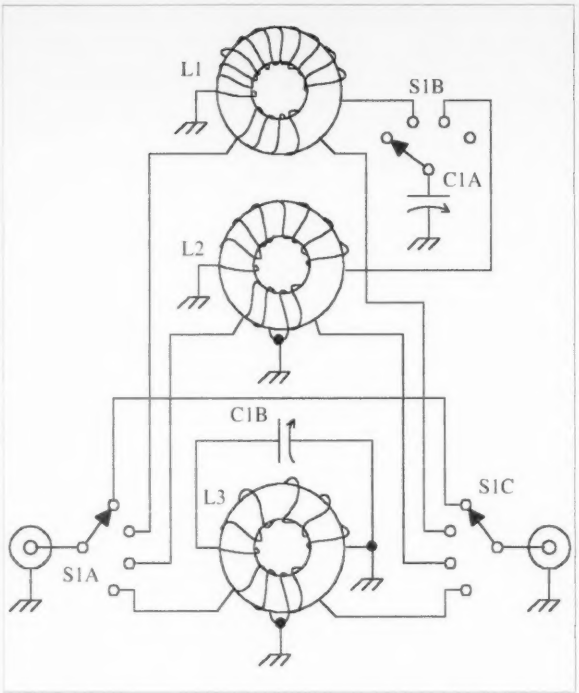

Fig. 3. *Schematic of complete 3-band preselector. L1, L2, L3 — see Table 1. C1A — back (larger) section of "rescued" capacitor. C1B — front (smaller) section of capacitor. S1A, B, C — 3-pole, 4-position rotary switch.*

a step attenuator. The signal enters the preselector through one BNC connector and exits through the second BNC to the RF voltmeter. When the preselector is tuned to the same frequency as the signal generator, a definite peak in RF voltage is indicated.

Conclusion

A preselector like this can also be built right into a receiver, providing much improved spurious frequency rejection. It's an enjoyable project to build, makes good use of a recycled part, and keeps one more thing out of the landfill.

For further reading

The step attenuator of **Photo D** is described in the article, "Build a Step Attenuator," *Electronics Now*, April 1999, pp. 34–37; correction, June 1999, p. 7.

The RF voltmeter of **Photo D** is described in the article, "dBm Meter," *Electronics Now*, November 1995, pp. 112–113, 158–159.

Considerable information on building high-Q inductors can be found in the book, *Radio Components Handbook*, Guido Silva I2EO, MFJ, Starkville MS 39762; 1998, available through Barnes and Noble and other bookstores. 73

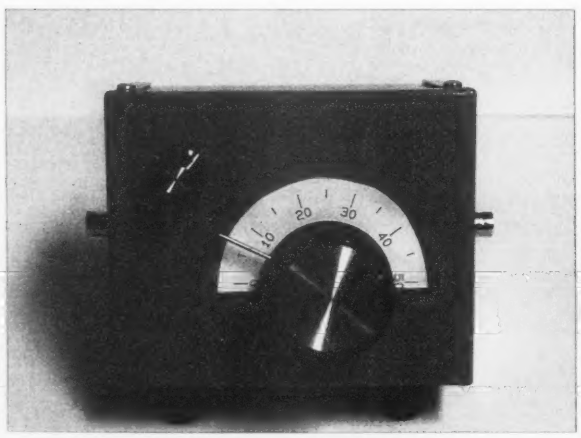

Photo C. *Use of a temporary scale for calibration.*

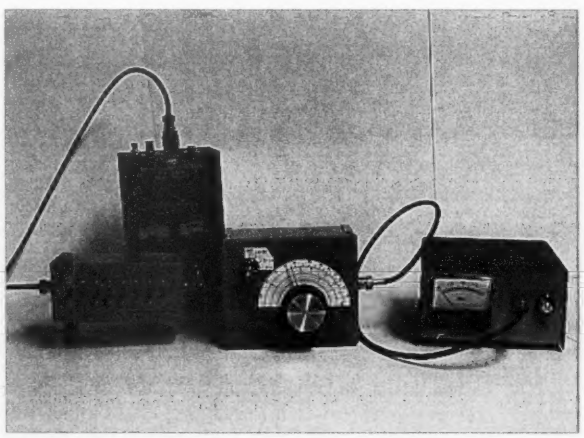

Photo D. *Calibration setup.*

73 Review

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Issaquah, WA 98027-0538
[n6nr@arrl.net]

Kenwood's Hot New TS-2000 — Part 2

Could YOU handle all these features?

In last month's issue, we provided a primarily hardware-oriented examination of this formidable new offering from Kenwood. This month, we are peeking under the hood of those features that are more firmware- and remote control-oriented, as well as some software that Kenwood has just introduced.

What better place to begin than on the screen of your home computer? The vast majority of ham shacks these days include some form of personal computer as an operating aid. With that in mind, Kenwood has introduced the ARCP-2000 software package (and the TS-B2000 as well). It is a nifty program that actually provides a feature or two that are not front-panel-addressable.

In the beginning of April, Kenwood placed the ARCP-2000 CD-ROMs on the local dealer's shelves. I checked the price at that time, and it was right about $80. As far as system requirements go, Kenwood recommends a 133 MHz (or faster) Pentium® or equivalent running Windows® 95 or better. The display is set up for 800 x 600 resolution, and requires a mouse and a keyboard. I recommend a Microsoft IntelliMouse 1.1A or equivalent that has the cursor wheel between the right and left buttons (more on that later). ARCP-2000 communicates with the TS-2000 via COM 1 through 4, and requires no level shifting or null modem adapters. The program installs in just a few minutes. My installation was error-free on a 400 MHz Pentium II with 256 megs of RAM. I recommend that if you intend to use this program with others in the stack, you should have a minimum of 64 megs of RAM on board.

As you can see in **Fig. 1**, all of the main front panel features of the TS-2000 are arrayed in a logical pattern. Many of the vernier controls such as volume, squelch, RF gain, and manual notch tuning are there as well. Now, I

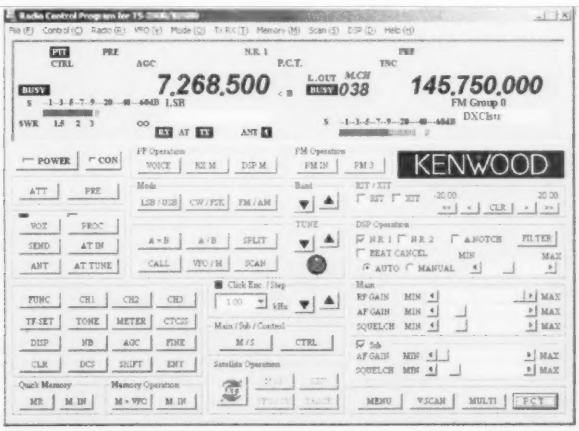

Fig. 1. *This is the main panel display of the ARCP-2000 software. (N6NR screen capture)*

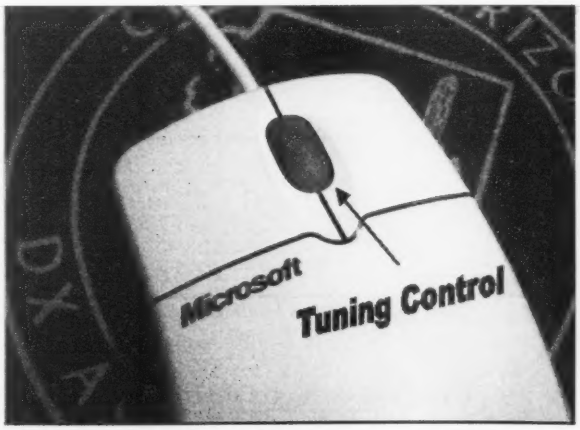

Photo A. *If you have an IntelliMouse, you can tune the radio with the cursor wheel.*

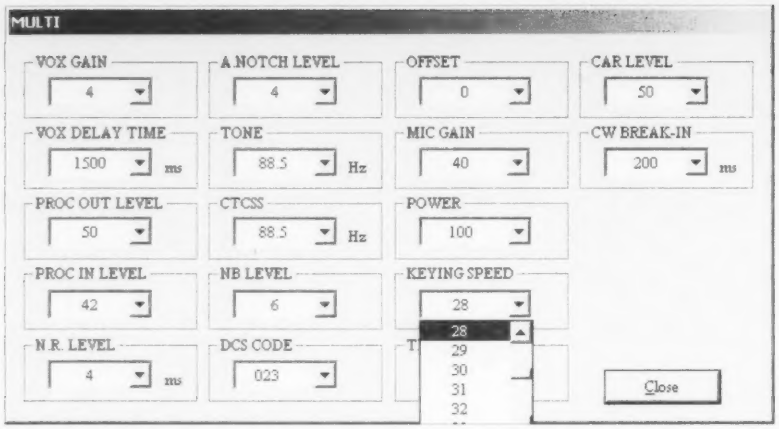

Fig. 2. The MULTI panel may be used to control the dynamic features of the radio. This figure shows how easy it is to change keying speed on the fly.

know that I raved about the feel of the VFO last month, but I have to tell you that I also enjoyed being able to tune the radio with my mouse. There are two ways in which the mouse may be employed to tune the radio. You may click on either the up or down arrow to move up or down in frequency. Tuning of the radio is also accomplished by clicking on the little tuning knob in the center. It will light up with a green background. All you need to do is press the right or left button on the mouse, and move the cursor in a circular motion to tune the radio. The right mouse button moves you up, and the left, down.

Did I say there are two ways to manually tune the radio? Well, I lied. There are three. If you have a mouse with a cursor wheel between the left and right buttons, you can tune up frequency by rolling the wheel forward, and down by rolling it backward (see **Photo A**). This is a very convenient feature, and it tells me that Kenwood is paying close attention to relatively recent developments in user interface to the PC.

Many of the dynamic feature settings of the radio are controlled with the FUNC key, and the MULTI/CH knob. The ARCP-2000 software provides direct control of these features as well. Double-clicking the MULTI tab in the lower right-hand corner of the main panel brings up another panel shown in **Fig. 2**. The mouse may be used to click open the settings, and another click on the desired level sets it in place immediately. If you're like me, I like to leave that panel open, especially if I am working CW.

Remember how I raved about the Packet Cluster Tune (PCT) feature? The ARCP-2000 software package definitely adds value to PCT. This feature may be selected with a single click on the PCT tab in the main window. When PCT comes alive, another window opens, as shown in **Fig. 3**, which provides a list of the most recent spots. By clicking on the spot, and then on the SET tab, the radio will tune to the frequency of that spot. I'm still a "kid in a candy store" when it comes to that feature. I love it!

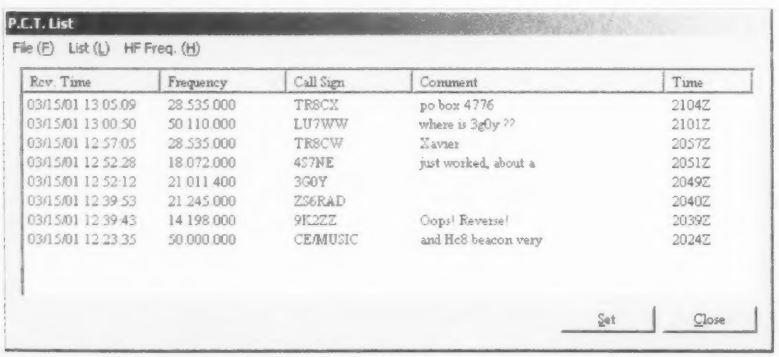

Fig. 3. This is the spot list window in the packet cluster tune mode.

If you are familiar with the TM-D700A, you already know about Kenwood's Programmable Memory (PM) feature (I like to call it Panel Memory). This feature allows the user to set up the D700 in any of five preset configurations which include frequency, memory, offset, deviation, panel display intensity, and so on. As it turns out, that feature is present in the TS-2000 as well, although I can't for the life of me figure out why they didn't make it available from the front panel (maybe they did, and I just haven't found it yet — just kidding). The ARCP-2000 main panel has tabs that can be selected to set and manipulate that feature. When you are satisfied with the way you have the radio set up (like in CW mode, with a tight filter and the like), click on PM-IN above the tuning controls. The 1–5 keys will light up (orange). Click on the desired numbered key, and the radio's configuration is stored. If you want to go back to that setting, just click on PM, the numbered keys will change color again, and you may select the previously stored configuration. You may also turn PM off, which is in effect a sixth configuration setting. As I am the owner of two TM-D700As, I use this feature a lot.

Filter design

In my estimation, the key feature of both the TS-2000 and the ARCP-2000 software is the ability to manipulate the transmit and receive filters in DSP. Kenwood has leveraged their experience with the TS-570 and TS-870 in bringing this feature forward. Perhaps I'm biased, but here is where Kenwood is light-years ahead of its targeted competition. Not only does the TS-2000 provide the capability of vernier control of the receive filters on the fly

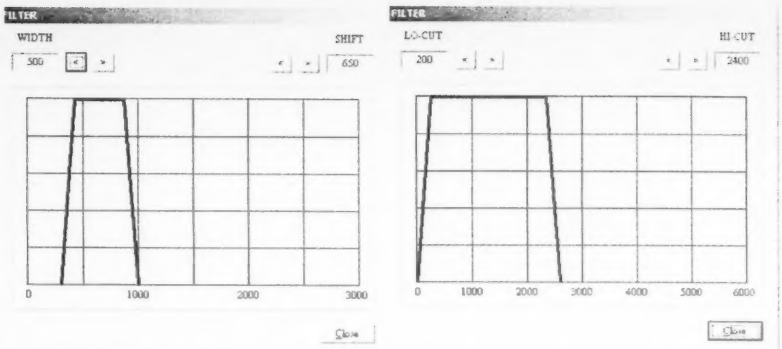

Fig. 4. Here are two views of the vernier filter control panel. The CW filter is on the left, and the SSB filter is on the right.

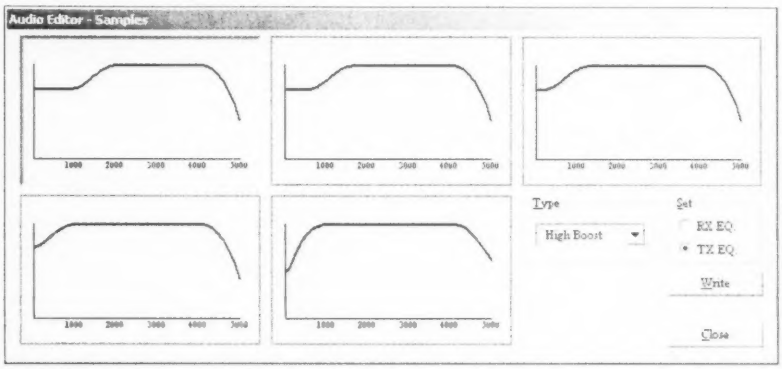

Fig. 5. Here is an example of the five high-boost filters that are available for user-selectable transmit audio equalization.

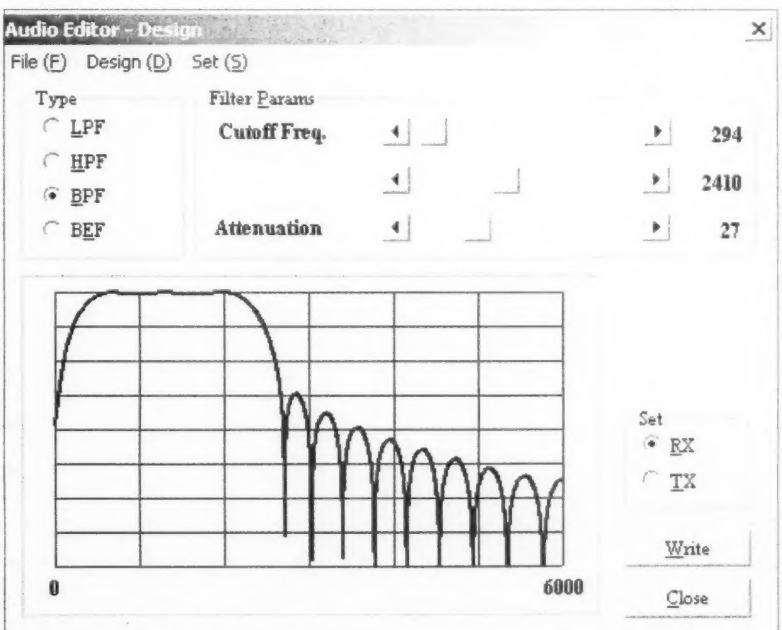

Fig. 6. Using the Design (D) feature, I have designed a digital receiver bandpass filter that operates from roughly 300 to 2400 Hz, with a first-order attenuation of roughly 30 dB. All I need to do is click on the Write tab, and select User from menu 20 to employ this filter.

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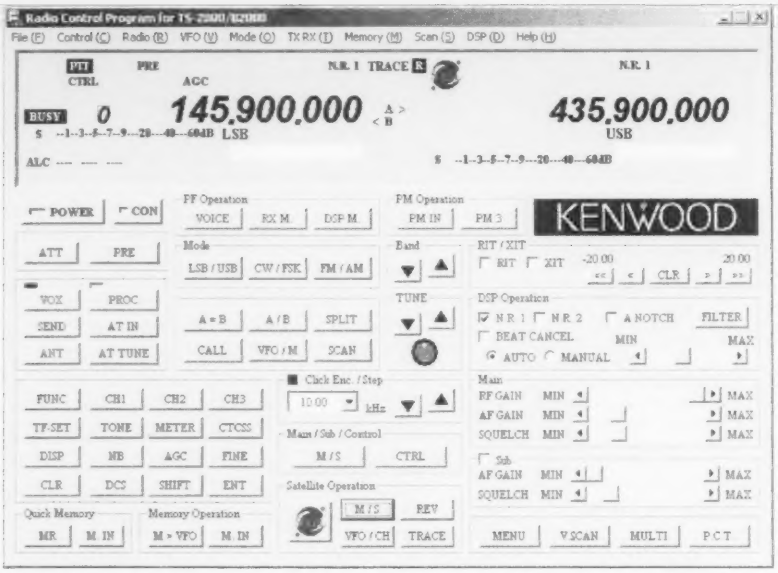

Fig. 7. *Here is the main panel in Satellite Mode. The TRACE icon is synonymous with the frequency tracking mode found on other transceivers that have Sat mode capability.*

(see **Fig. 4**), but the user may design her or his own filter shape for both transmitter and receiver audio.

Within the ARCP-2000 menu is a control that allows the standard filter shape control found in the front panel features of the TS-2000 to be used. This is found in menus 20 and 21 (RX and TX Equalizer). By pulling down the DSP menu (on the ARCP-2000 upper menu bar) and selecting the Audio Editor, the operator may select two user-defined filter modes. One is called Samples (S), and the other Design (D). The Samples menu provides predefined filters for both the transmitter and receiver that can be written to the radio. There are seven filter categories that range from bass-boost, to flat response, to high-boost, with a couple of specialized shapes thrown in as well. Under each filter type, there are five shapes that may be selected, for a total of 35 predefined filters. That is quite an array all by itself.

If you have a physical limitation (like partial hearing loss) that can be mitigated by a special filter shape, or if you are among a growing number of SSB operators who enjoy expanding the range of audio characteristics that your transmitter can emit, then you will appreciate the Design feature. This allows the operator to directly control the frequency limits, shape, and attenuation of any transmit or equalization filter that may be written to the radio, and selected under the transmit and receive equalizer menus. I am simply amazed at the versatility that this provides. I had a chance to play around with some PSK31 prefiltering of the RX and TX audio, and was very pleased with the results.

Remote control features

I promised that I would talk a bit more about some of the remote features such as microphone control, wireless remote control, Sky Command, and Crossband Repeating. First of all, the microphone control feature is very similar to that of the D700. A number of the microphone buttons may be programmed to provide many of the control and menu functions. I have my microphone set up to switch between SUB and MAIN, between Memory and VFO, enter the SCAN mode, and open the squelch in MONITOR mode, as well as manually enter a frequency into either VFO, vernier the frequency, and a few other repeater-oriented functions. In short, the microphone is a viable tool for controlling often-used features and modes of the radio.

A subset of these features may also be controlled via another radio with a DTMF encoder. A TH-D7A is particularly useful in that it can automatically

Photo B. *Pardon the parallax in my close-up lens. Here is a picture of the RC-2000. Anything look familiar to you D700 owners?*

Photo C. *This is the EASY viewing mode. This is very handy when you are cruising down the road, and can't find your reading glasses (that's never happened to ME, of course).*

Photo D. *Notice how the PCT DX spot information is displayed in an aesthetically pleasing cascaded fashion in the SUB window.*

transmit the "password" required to precede each command. Without it, you need to send the password before each command sequence. From another radio you can basically control the VHF/UHF portion of the radio. You can turn DCS or CTCSS on and off, select the tone frequency, enter or leave the REPEATER mode (transmit offsets), switch to low power, and toggle between VFO and Memory. I tried it and it works very well.

The real fun mode is Sky Command II. Because of certain ill-conceived regulatory limitations, I had to test this feature on the bench with dummy loads (don't even get me STARTED on this subject). My D700 worked in perfect concert with the TS-2000. So as not to encourage you too very much, all I will say is that Sky Command II works as advertised, and is a fun feature. Use it at your OWN risk. I might add that the Crossband Repeat function works very well on its own, and unlike some other transceivers I have used, I was able to enter repeat offsets and CTCSS tones. One must be very careful, however, not to put the TS-2000 into a mode that will cause interference to other amateurs on repeater or simplex frequencies. Please be diligent about this, won't you?

Photo E. *Here's another note to TM-D700A owners. Remember when you opened the box for the first time? Remember that little warning note that said that you couldn't buy the control head separately if it gets stolen, or words to that effect? Well, your worries are over. If that untoward event should occur and you are left with a headless radio, just buy an RC-2000. It has the ability to sense whether it is connected to a TM-D700 or a TS-2000, and switch into the display mode that corresponds to the radio it is connected to. Here's my RC-2000 (oops, did I say MY?) connected to the D700 in my shack. BEYOND AWESOME!*

Satellite mode

With the press of one button, or click of a mouse (if you are using ARCP-2000), you may enter the world of full-duplex satellite operation. I was very pleased to learn that the SAT mode also works with the HF spectrum. In-band full-duplex operation is not an option for obvious reasons.

There are some interesting features that are useful. The first is the ability to store 10 satellite configurations, and give them an alphanumeric label for easy recollection. Second, the radio provides the operator with the ability to monitor his or her own frequency with the push of a button. This is needed to provide due diligence in ensuring that you are not hammering someone else locally while trying to make a contact. The TRACE mode gives the operator the ability to track the offset between the uplink and the downlink without the obviously poor practice of sending a string of dits, or imitating Andy Griffith by yelling "hello" into the microphone until you hear yourself coming back through the "bird." TRACE will operate in direct or inverse proportion to your transmit frequency depending upon the type of translator employed on the satellite. It also may be shut off if translator tracking is not required.

I must say that having all of the DSP toys available while making a satellite contact is a real blessing.

The RC-2000 remote control head

If you own a camper or a motor home, you MUST get one of these! The folks at Kenwood sent me one to facilitate my review, and now they're going to have to hunt me down to get it back (just kidding — or am I?). D700 owners will recognize this little device immediately, as it is the same display and enclosure as the control head for their radio (see **Photo B**).

The RC-2000 will allow the operator to do just about anything he or she could from the front panel of the TS-2000. It will also allow setup, storage, and retrieval of those PM functions I talked about earlier. It is all menu-driven. Once you get the hang of

Continued on page 56

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Beaver PA 15009
[varpenns@usaor.net]

Up-'n'-at-'em Stealth Vertical

The Outreach 500 was the perfect solution for this ham.

Stealth amateur radio operation is sometimes necessary due to restrictive covenants or other mandated requirements placed upon property owners, some of whom happen to be hams. Stealth operation may also be a choice so as to prevent unwanted and undeserved criticism or blame from neighbors who think every glitch in their home is caused by the local amateur radio operator.

In an attempt to keep the neighborhood peace and still enjoy the fine hobby of amateur radio, one solution to HF operation will be described here. This method has been successful for me and has yielded many HF contacts in the continental United States, as well as DX work.

Overview

It all started when I wanted to set up an antenna for HF work. The property does not contain any high natural structures, such as trees, to lend a hand as vertical supports for wire-type antennas. A tower was not in the plan at this time, due to other considerations. The house itself is a ranch-style home, so there was not much in the way of vertical help here for a tall support. Attention turned from a wire antenna to a vertical antenna for the solution.

Now, what vertical to use? There are many to chose from, each having their own plus and minus considerations. After much deliberation, I decided to use the Outreach antenna with the Outpost tripod/ground coupler mounting unit. I bought the Outreach 500 because it handles more power than its almost-twin, the Outreach, and it is more stout in its construction. It is made beefier in order to handle the higher power.

***Photo A.** The Outreach 500 is a little hard to discern — perfect, if you need a little stealth!*

Practical usage

The Outreach antenna would have been fine, too. Aside from power handling, the bands available on each model are slightly different. The Outreach 500 has 80/75 meters through 10 meters, as well as 6 meters. The Outreach offers 160 through 10 meters but no 6 meter tap.

Physically, the antenna is 12 feet tall. Two 4-foot sections, which contain the band taps, thread together, and the top section is a 4-foot-long "stinger." The stinger is adjustable for VSWR, for those who desire to do so. It has a convenient score scribed near the bottom end for easy reference to adjust from. Leaving it set on the score mark has worked well for me.

The base, called the tripod/ground coupler mount, is a neat piece of

equipment. The antenna mounts to it using a 3/8-inch x 24 threaded base piece. It is made of a good grade of aluminum and has stainless steel hardware. In fact, no tools are necessary to put it together — although I did use slip-joint pliers to give the threaded base a snug when attaching it to the tripod base piece. Wing nuts are used at the joints where tightening is done.

There is an aluminum plate at the bottom of each leg of the tripod to "couple" to the ground. I have found this to work very well. No additional radials are used, even though the soil here is typical of western Pennsylvania — rather high in clay content and not the greatest for conductivity. A hole is in each of the plates, to insert a tent peg or similar stake to secure the tripod to the ground. I have not found this necessary. The antenna has a low wind profile and has not moved or toppled over in the location where it has been placed. It is subject to wind and gusts, as I live on top of a hill in the open where the wind can be brutal at times. The tripod is easily folded up for transport if portable operation is needed.

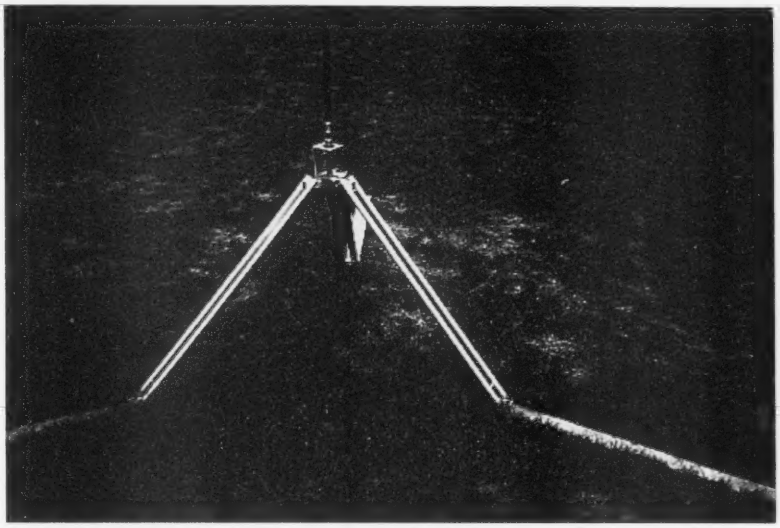

Photo B. *Up-close look.*

VSWR measurements for my antenna are given in **Table 1.** If you use a criterion of less than 2:1 VSWR, the antenna is usable without a tuner on some of 40 meters, and all of 30, 20, and 17 meters. Also, a limited portion of 15 meters was less than 2:1. For the other bands, the VSWR is higher than this criterion, but a tuner should make matching 50 ohm impedance possible.

	Meters	Lower Band Edge	Band Midpoint	Upper Band Edge
Band	75	3.500	3.750	4.000
VSWR		>5	>5	>5
Band	40	7.000	7.150	7.300
VSWR		3.0	1.2	3.0
Band	30	10.100	10.125	10.150
VSWR		1.63	1.75	<2.0
Band	20	14.000	14.175	14.350
VSWR		1.75	1.45	1.45
Band	17	18.068	18.118	18.168
VSWR		1.35	1.35	1.4
Band	15	21.000	21.225	21.450
VSWR		>5	1.75	>5
Band	12	24.890	24.940	24.990
VSWR		2.75	3.0	>3
Band	10	28.000	28.850	29.700
VSWR		3.0	2.5	>5
Band	6	50.000	52.000	54.000
VSWR		Not Done		
Notes: 1. Freqs given in MHz. 2. VSWR values given :1.				

Table 1. *Outreach 500 VSWR.*

Conclusion

This antenna system has worked well for HF operation. The antenna with the tripod is pricey. Granted, there are less expensive ways to go, but the quality of the materials used here is very good. The band tap wire lead must be manually moved in order to change bands. This might be more of an inconvenience than a problem. It is easy to change the tap, but keep a ladder handy, as some of the tap points are above the average reach. The tap points are angled downward so as to shed rain and snow — a good consideration in antenna design.

This system is great for portable operation such as Field Day, special events, demonstrations, etc. No traps are used, so problems associated with them do not exist. The antenna breaks down easily and a cloth case was supplied to carry the sections. The tripod merely folds up for transport, even in the smallest of vehicles. The system is rugged, nicely designed, yet simple. It has worked very well for my style of HF operation.

Outbacker is distributed in the United States by Alpha Delta Communications, Inc., P.O. Box 620, Manchester KY 40962; tel. (606) 598-2029; fax (606) 598-4413. The Outreach 500 antenna can be purchased at any number of amateur radio equipment retailers, such as Amateur Electronic Supply and Ham Radio Outlet. It lists for about $439.99. The Outpost tripod/ground coupler lists for about $199.99. 73

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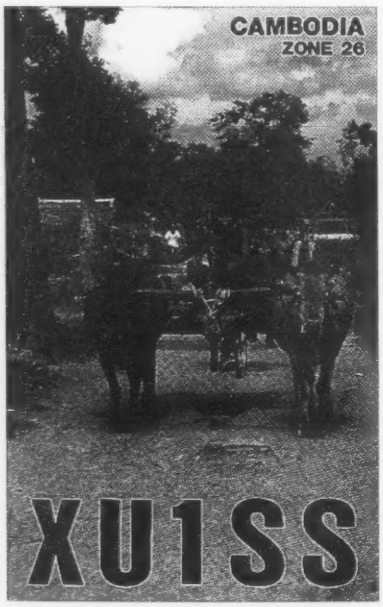
Bring Back the Magic!

Is this guy living in a dream world? YOU tell US.

Once upon a time, there was a young lad who wanted to become a radio amateur. It all started when he read about building a crystal set in a book called the Boys' Own Paper. *This publication is no longer in print, of course, and crystal sets have long since bit the dust! However, for me the seed was sown at that time and I was hooked — on radio. I wanted to be able to make something that I could listen to distant radio stations on, other than my parents' Murphy 10-valve radio. I also tuned around the shortwave bands on this radio and managed to hear hundreds of stations, and interesting sounds.*

In the early 1950s money was tight, and it took a long while to save pocket money to buy components at the local radio store. However, this I managed to do, and together with birthday presents and Christmas presents, I constructed a crystal set on a breadboard, just as the book said. I had no headphones, and had run out of money! My uncle came to the rescue; he had a pair of headphones saved from the second world war, and these provided me with my audio. In the meantime, I had erected a long piece of wire from the house to the bottom of the garden as an antenna. Upon hooking this to my crystal set, imagine my delight when, fiddling with the cat's whisker, a station could be heard in my phones. My parents were duly impressed, and I was on my way.



After a while, and much reading of books from the library, I decided to build a valve receiver. Using a super-regenerative circuit, with HT and grid bias batteries, not to mention an accumulator for the heaters, I made this receiver. The two valves came from the local radio shop and cost a fortune. I had saved for a long time for these. Proud as punch of my new receiver, I demonstrated it to my uncle. In my haste, I connected the HT battery to the LT terminals. I was devastated; you don't get a second chance with such a stupid action, and I paid the price! I could not afford to replace the valves, so I left the radio on the shelf. One day, my friends and I were walking around the town and we came across a second-hand shop selling all sorts of radio bits and pieces. We went in and I could not believe my luck as I found those two valves I needed, at a fraction of the cost I had paid originally! Needless to say, we never visited the high-street shop again!

I managed to repair the radio and was enjoying listening, when I heard a strange station, who appeared to be talking to somebody in Holland. Well, I eventually found out it was a local radio amateur. I also managed to find out where he lived, and was invited to the local radio club. This was the start of my amateur radio activity.

I served my shortwave listener apprenticeship over the next few years and in the meantime I commandeered part of my father's shed in the garden, where I had an R1155 receiver with an RF27 unit as a crystal-controlled converter for 21/28 MHz. The R1155 was a communications receiver used onboard a second world war bomber aircraft. The modification of the RF27 unit was done for me by Doug G3HUL. I spent many a happy hour just listening on all bands, collecting callsigns, finding out where they were, serving my shortwave listener apprenticeship, as we all did in those days.

I gleaned a lot of radio knowledge from numerous trips to the library. I helped on National Field Day events, attended club meetings, and so on. One member of the club invited me around to his QTH, where he had several receivers and other equipment that I had not seen before, an AR88D, and HRO, and such. I was hooked even more! He gave me his old *ARRL Handbook*, dated 1953, and I still have it to this day. It became my bible, and I read avidly and looked with envy at the advertisements in the back pages! Two other amateurs, known in the hobby as Elmers, offered to get me through the radio amateur's examination. Bill Brennan G3CQE, unfortunately now a silent key, was a BBC engineer and he covered the technical side, while Pat Gowen G3IOR taught the Morse. We had one evening a week from August until the following May to cover the complete syllabus, and Bill, being a BBC engineer, was very thorough. We also had fun doing it, with some mock examinations and lots of coffee, tea, and biscuits. We used to end the evening by getting into Bill's shack, where he would have a few QSOs.

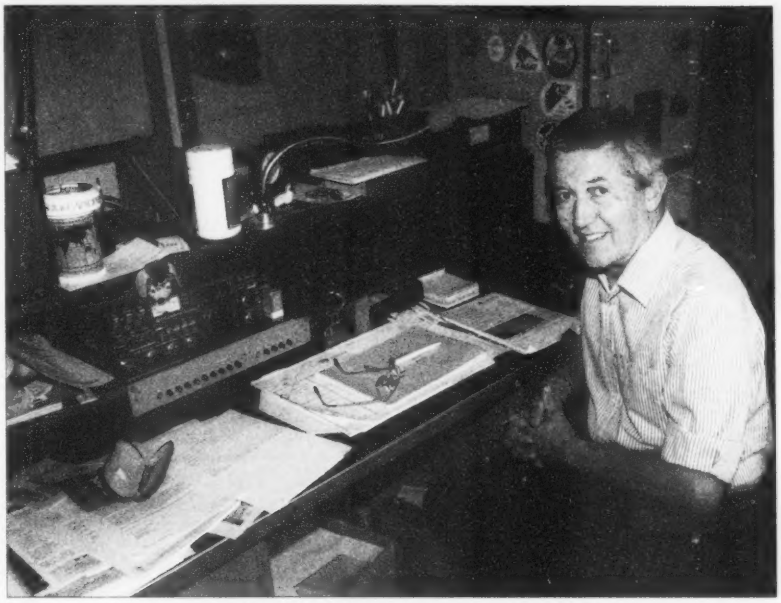


Photo A. *A lifetime in the shack has been very rewarding for G3LDI.*

I passed both the technical and Morse examinations and was a very proud teenager to sport a new G3 license at the radio club. Then the hard work began. I had to build my own equipment, as nothing could be bought with the exception of a communications receiver, as they were called. I left school and obtained a job ,and within three years I had sold my

R1155 receiver and bought my own AR88D. I was over the moon with this, and then set to work building the Elizabethan transmitter. It was in a six-foot rack, all valves of course, and ended up in a pair of 807s modulated by a pair of 807s. Other rigs followed, and several years later I built an SSB rig and also began helping other newcomers by teaching Morse.

The magic — if it can be called that — has stayed with me throughout the years, but it was only because I knew what I wanted to do, and that was communicate with other like-minded people. Unfortunately, the modern generation does not seem to either view the hobby or even enter the hobby in the same manner. I have seen lots of them who think they wish to be an amateur, but do not want to devote the time and effort to study the theory and Morse in order to become licensed.

Amateur radio is a potpourri of all sorts of people, but mostly with a common denominator of a basic technical skill, good operating procedure, and the ability and willingness to help others. In other words, adherence to the amateur code, as printed in the front of all *ARRL Handbooks*.

If the amateur license is too easy to obtain, it will not be valued. This is the premise on which we should work, not the other way around. If something is worth having, it is worth putting a lot of effort into getting. This is what my father taught me, and it should stand today.

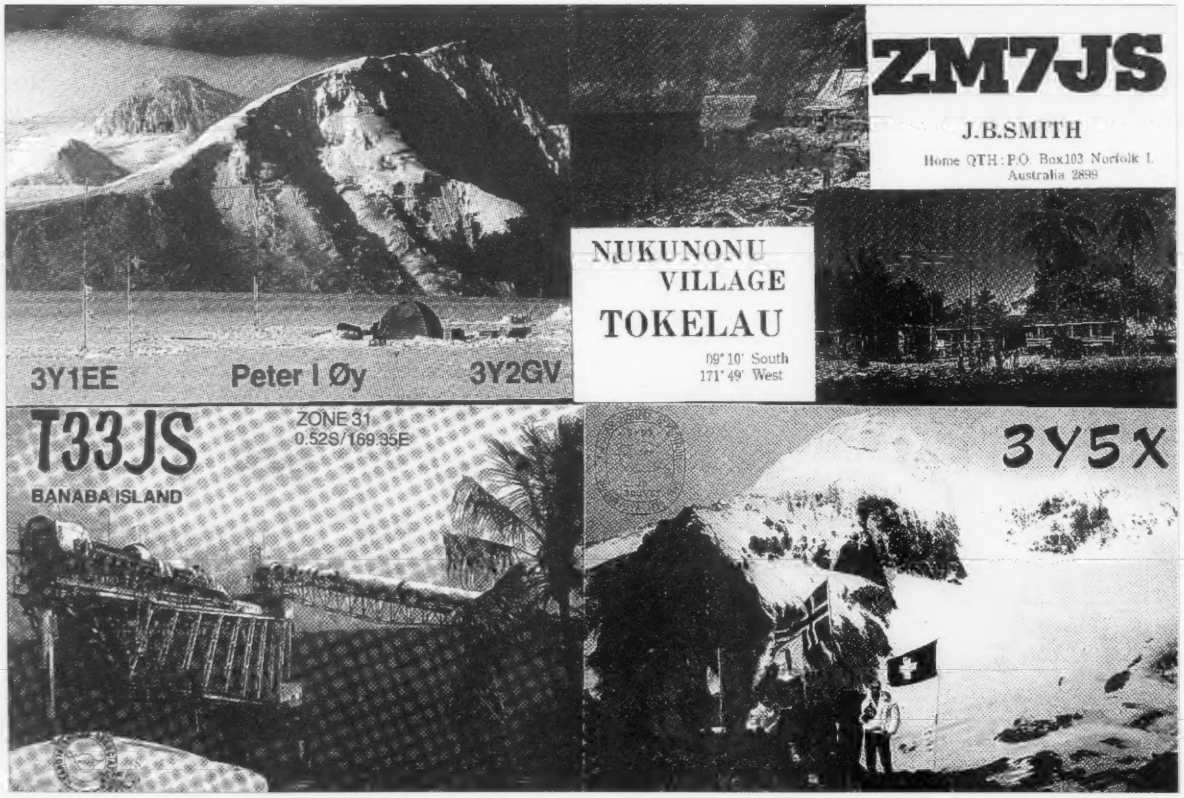
However, having just said all this, it can be debated until the cows come home. The fact is that the number of active amateurs is dropping. This is probably to be expected with the advent of modern technology, plus the inevitable silent keys, of course. The mobile WAP phone, the Internet, the PC and all that it entails, have all taken their toll on the hobby. We therefore have to try to attract the newcomer in other ways. We have to show the advantages of being within the hobby. Emphasis must be placed on the social side, club meetings, Field Days, contests, and so on, plus the operating awards that are available, QSL cards, and so on.

Using the Internet is fine, but there are no QSL cards or awards to be had by using E-mail, nor is the basic satisfaction of having communication by radio.

With amateur radio, you can chat, for as long as propagation will allow, with somebody in Australia, in fact to lots of people in Australia, or in just about any country in the world.

We should be promoting this sort of thing, with talks at schools and colleges. We should arrange a demonstration station at certain public events, with a display of QSL cards and awards, encouraging the contact to talk about his locality, his geography, his work, and so on. A display of QSL cards such as those seen here will help. The modern QSL card usually contains pictures and information about the place visited, and a comprehensive geographical knowledge can be built up over the years in this way.

One of the most satisfying aspects of the hobby is the fact that lifetime



friendships can be formed with amateurs in other countries through regular skeds. This can lead to visits and holidays with each other, something that could not possibly happen without the hobby.

I suppose I am living in a dream world, as several of the large national radio societies are advocating the 5 wpm Morse test, with a view to abolishing it altogether. They are also advocating making the technical knowledge required such that all the prospective candidate will be asked to show is that he can put a mains plug on correctly. To my mind this is not good for our hobby. Whilst I can understand the arguments that suggest this is the way forward, I do not agree with them. It is extremely difficult to reconcile the differences, but making it easy will not bring back the magic. There again, I suppose the magic is all in my mind, and not shared by many these days. Perhaps it was something that was peculiar to my generation of amateur, and trying to rekindle it will not work.

I am concerned that we might be on a downward spiral that is difficult to reverse. E-mails are so easy and fast, and this is the way that modern youth thinks. This is called progress, but it is a shame that this progress comes at a price, and if we are not careful, that price could be our frequency spectrum. Commercial interest in some of our bands is certainly there, and some frequencies have already been lost in certain parts of the world. If governments can see an easy buck to be made, I don't think a few amateur radio protesters would get in their way! We have already seen the selling-off in the UK of frequencies that can be used by the modern technology, WAP phones, satellite navigation, and so on.

I have valued my license and my hobby over the 45 years I have been involved. Making it easier to obtain will devalue it and might even lead to further erosion of the amateur population. Most of those who had to put lots of effort into obtaining a license seem to remain active and interested. They also have the added advantage of being

Continued on page 56

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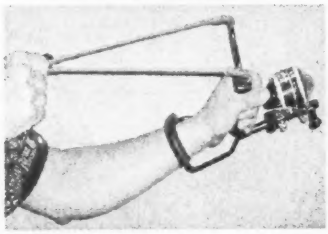

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Read All About It!

Part 7 of good stuff from The Hertzian Herald.

All about Radio bug bites boy, part 2; Don't ever do that!; and Computer trivia.

The word "crowded" does not even begin to describe the condition of the 40-meter Novice band in 1958, when I got my license. The only thing that approaches it today is Field Day or Sweepstakes — but, of course, the CW was slower. I did a little survey of my Novice-days' QSLs: two thirds of us were using receivers without crystal filters. The bandwidth was about 6 kHz, so we usually heard at least six stations at once. A common challenge was to set the dial at random and see who could copy three different stations without touching the dial — just by concentration.

In 1958, about 70% of us were using transmitters built from kits, 20% had home-brews, and 10% had commercially built rigs. If you could copy a signal report, a name, and a state before the QRM clobbered the guy, it was a good QSO. Postcards were 2 cents (until August, when they went to 3 cents), and if you could get a city and an address through so you could exchange QSLs, it was a cause for celebration. If you couldn't get it through, you had to wait until your call appeared in the next year's *Callbook* to get your QSL — no Internet callsign servers then.

Well, I put out CQs for about ten minutes that first night, and was lucky enough to copy KN9JSK coming back. It took ten minutes to get his state and a signal report (489) through the QRM — then he was buried in it. (I still have the QSL from that first contact — it's displayed in the top left slot on my bulletin board.) I called a few stations and sent a few more CQs, but heard no more replies. Then it was ten o'clock and QRT — school night, you know.

The next day I got on right after school and found the band somewhat less crowded. I had a 50-minute ragchew with Wisconsin, and then worked North Carolina. In a month, I had worked 14 states, as far out as Texas. During the next summer break I once got up at 4:30 a.m. to get away from the QRM, and worked Oregon — the West Coast at last!

How can someone of today's generation understand what direct communication over such distances meant to a 14-year-old in 1958? I had never been outside the states of Ohio and Michigan. This was way before cell phones and the Internet. It was before direct-distance dialing and satellite relay — *Sputnik* had gone up less than a year before. I remember Dad with his hand over the mouthpiece of the phone saying, "It's long distance," and Mom replying as a matter of course, "Who died?" In those days, long-distance calls were for emergencies only.

That autumn, I got my General ticket and began knocking off states toward my WAS on 20 meters. (I remember my civics teacher's astonishment when I filled in a map with the name of every state in about five minutes: It was a snap — I had worked most of them.) Soon after, I started working a little DX on 15 meters. Any DX was rare then, and pileups for the DX stations were awesome. It was only 13 years after the devastation of WW II in Europe, and I suppose those folks were still struggling for basic necessities, with little time or money left over for hobbies.

In January, I hooked up the output of an old two-watt phonograph amplifier to the screen-grid of the 6DQ6 final of my DX-20 transmitter and went AM with 32 watts input. (Transmitters were never rated by RF output then.) I had run into a number of local teenage

Reprinted with permission from *The Hertzian Herald,* newsletter of the Monroe County (MI) Radio Communications Association (MCRCA).

hams by then, and we began congregating on 75-meter phone every day after school — the Teen Net of Toledo, we called it. We formed our own teenage radio club, with perhaps 30 members. Meetings rotated around to members' shacks, and we put on some spectacular Field Day performances.

I'd say it was ham heaven, although I didn't realize it at the time, and I'd give anything to be 15 again, climbing a tree to secure the end of a Field Day antenna at Side Cut Park.

Don't ever do that!

Hello, fellow hamsters. Here's a grab bag of tips NOT to do, if you want to avoid trouble. Most of these I have seen hapless students do. A few I have done myself — once.

1. Never mark a printed-circuit board with a pencil. Pencil lead — actually graphite, a form of carbon — is conductive.

2. Never scrub a PC board with steel wool. Tiny steel fibers may lodge in the copper, shorting traces together.

3. Never pull a component out of a hot PC pad. The glue that holds the copper to the board is soft when hot, and you'll pull up the pad. Clean, straighten, clear, or cut until the component practically falls out.

4. Never file the tip of a temperature-regulated soldering pencil. You'll file off the iron plating that keeps it from corroding. Pure copper tips, used on inexpensive soldering pencils, need to be filed into shape and tinned regularly.

5. Never solder anything that is above your head or face. I got a hot blob of solder dropped on my chin once this way. (Good thing my mouth wasn't open.)

6. Never press down on springy wires while soldering. If they spring up, they'll throw solder in your face. Put the pencil under the wires, and press up lightly.

7. Never let a wire end point at anyone's face when cutting it with a clipper. The wire end will fly. Point it down at the floor.

8. Never connect or splice wires by simply twisting them together. The connection WILL go bad at some time. Solder it, bolt it, or use approved wire nuts or crimp fixtures.

9. Never saw at the insulation with a knife when stripping a wire. Roll the wire across the knife blade to avoid nicking the wire.

10. Never use tape as a permanent fixture. It will come loose with time. Use heat-shrink tubing, binding posts, or approved crimp splices, but don't tape.

11. Never measure a meter's coil resistance with an ohmmeter. Their test currents can be as high as 100 mA. You can imagine what such a current would do to a 100-µA meter.

12. Never connect a multimeter across a voltage source without double-checking to see that it hasn't gotten itself on the milliamps or ohms ranges somehow.

13. Never make changes in the hardware or software of an instrument without stapling a copy of the change documentation to the user's manual. I put another copy inside the instrument.

14. Never write anything on a piece

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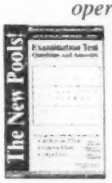

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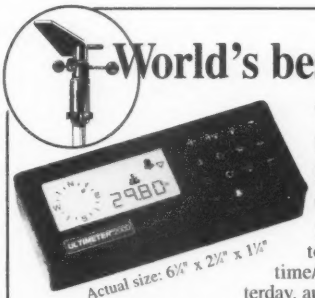

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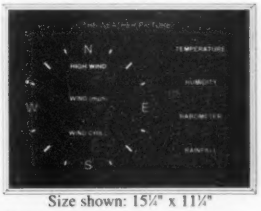

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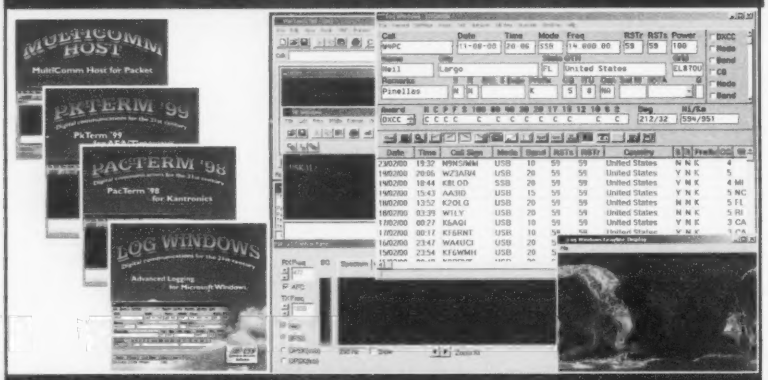

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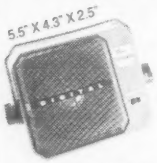

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of paper until you have put a name, date, and title on it.

15. Never use an adapter plug or a 2-wire extension cord to defeat the 3-wire safety ground on an appliance cord.

16. Never work on a construction site unless the electric power is supplied through GFIs (ground fault interrupters).

17. Never extend an existing 2-wire 110-V circuit to a new 3-wire outlet using the existing neutral as the new "ground." The new ground must go all the way back to the service entrance. Violating this rule will place the case of a 3-wire appliance at 110 V in the event of a break in the neutral line.

18. Never charge a car battery in an enclosed area. Charging produces explosive hydrogen gas. Even if it's -5 degrees outside, open that garage door!

19. Never store a car battery on a cold garage floor. Temperature differences between the floor and the air cause internal currents which discharge the battery. Put it on an insulating sheet of Styrofoam.

20. Never wear a ring or a watch while working around 12-V auto or high-voltage circuits. I think the dangers here are obvious.

Computer trivia

MEGACHIP. One of the most common questions that an electronics engineer hears from casual acquaintances is, "How is it possible to cram several millions of transistors on an integrated circuit chip the size of your thumbnail?" Of course, a complete understanding of the physics, chemistry, and optics involved is beyond most people's reach, including my own. But some notion of how it is possible might be obtained like this:

Let's say it's 1961, and Michigan Instruments, a maker of silicon transistors, has just given you a million dollars, and told you that, by the end of the year, you are to have two transistors interconnected on a single piece of silicon. Do you think you could do it? With a million bucks and the resources of a company that was already proficient in making single transistors behind you, I think you could.

Then imagine that in 1962 they gave you $2 million and asked you to integrate three transistors by the end of that year. And suppose that this continued, with the company adding a million dollars to their payment and expecting a 50% increase in the number of transistors on the chip each year. I don't think that you would find the task impossible at any point, but by 1999 you would be putting ten million transistors on a chip. Do the arithmetic: on your calculator, it's 2 x 1.5 to the 38th power.

We didn't leap to megachips overnight. It's a case of a new technology illustrating some old proverbs. Ben Franklin phrased it as: "By diligence and patience the mouse chewed the cable in two." And long before that, the Chinese said, "A journey of a thousand leagues begins with a single step."

BOOT IT. We don't switch our computers on; we "boot them up." Is that because they're like a lazy dog, that has to be kicked to get it going? No, the term has nothing to do with "giving it the boot." The original term was "bootstrap," and referred to the finger straps at the tops of some boots that help you pull them on. If a child is wearing such boots, an adult can pick the child up by the bootstraps. A common joke was to tell a child to pick himself up by his own bootstraps. The phrase became a metaphor for an impossible startup situation. For example, you need a job to get money to buy a car, but you need a car first to be able to drive to the job.

Early computers had to "pick themselves up by their own bootstraps." As they came from the factory they had no stored program in them at all, so they didn't even know how to read their own keyboards or tape readers. Once the tape-reader program was in, other programs could be loaded easily from tape, but how do you get that first program in?

In 1971 I worked with a PDP-8 minicomputer. Starting it up was called bootstrapping, and it began by setting 12 binary address switches and 8 binary data switches and poking a load button.

This was repeated about a dozen times to enter a short program which told the computer how to read its tape reader.

Another program (on paper tape) was then loaded, which instructed the machine how to access its keyboard and printer, and how to run BASIC or assembly-language programs.

Today's computers have BIOS (Basic Input-Output System) programs in nonvolatile ROM, so they are ready to access their disk drives and keyboards without a lot of switch flipping, but the term "boot" remains as a reminder of earlier days. Now you know! 73

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By Eric Shalkhausser W9CI, SK

The History of Ham Radio

Part 6: Across the Atlantic.

In the winter of 1920–1921, radio amateurs were openly dreaming about beaming radio signals across the Atlantic Ocean. However, their plans were not very well organized, and attempts during February, 1921, resulted in failure. No signals were heard, although many British stations were listening intently.

The effort prompted the operating department of the American Radio Relay League to make a renewed attempt. This time, to eliminate confusion and unnecessary QRM, a contest was planned and executed to select the stations within the American continent whose signals had the capability to cover the long distance. Applicants were required to first fill out a prescribed form.

The renewed attempt was planned for the period of December 7-16, 1921. Test transmissions were to start at 7 p.m. and continue uninterrupted until 1 a.m. EST. Each amateur radio district was to alternate, using a 15-minute time period, in making transmissions.

Phillip R. Coursey of London, editor of *Wireless World*, who was also instrumental in arranging the prior effort during the previous February, was in complete charge of all receiving stations in England and the other countries in Europe. All correspondence was routed through him. To assist and supplement the efforts of the British amateurs in coping with the problems (and there were many) of reception of American signals, the ARRL traffic department decided to have an American amateur sent to England to make sure that the most desirable and effective means were employed to insure success of the venture. Paul F. Godley, a native of Montclair NJ, who was a seasoned amateur radio operator and well versed in the use of shortwave equipment, agreed to undertake the assignment. Mr. Godley had adapted the Armstrong regenerative circuit to shortwave work.

So Godley and the equipment which he selected to take with him, along with the British and their receivers, made the undertaking an all-amateur project with everybody participating. With this in mind, the ARRL traffic department set up the following overall schedule: Six hours each night, for ten successive nights, signals were to be beamed in the direction of England and Europe. The French and the Dutch, as well as all other amateurs, were intensely interested in what was being attempted. From 7 to 9:30 p.m., a free-for-all schedule was to be followed. This two and one-half hour period was divided into ten sections of fifteen minutes each. During each section, all amateurs in a given amateur radio district would transmit. This would enable all amateur stations to take part. This part of the program was designed to open up the ether routes, one way or another, hoping that someone would get through.

The second and major period of each of the ten nights, from 9:30 p.m. to 1 a.m., was arranged exclusively for those qualifying amateur stations with the long-distance records. They were asked to beam their signals according to a prescribed selective schedule which was given to them by the operating department and kept secret until the day of transmission. Each station in the contest, free-for-all and selective, would initiate a call addressed to TEST, calling three times and signing three times, repeating this as often as desired during the periods assigned to

Reprinted from *73 Amateur Radio*, October 1978, where this was originally reprinted from *QCC News*, a publication of the Chicago Area Chapter of the QCWA. Photos were taken from the 1BCG commemorative issue of the Proceedings of the Radio Club of America, Inc., *The Story of the First Trans-Atlantic Short Wave Message*, October, 1950.

the district. For example: TEST TEST TEST de 1BGD 1BDG 1BDG (repeated).

Godley would keep an accurate log of all signals heard and have witnesses to monitor all records kept. After each night of the tests, the results would be given to one of the British longwave stations and the results of the previous amateur transmissions relayed to the listeners in America. In this way, every amateur in the United States and Canada would immediately be informed of the outcome of their endeavors. Commercial station MUU at Carnarvon, on a wavelength of 14,000 meters with plenty of power, could be copied anywhere on the American side As a special concession and because of the great interest that commercial companies took in these tests, the daily messages given by Godley to MUU were repeated by WII, the RCA station in New Brunswick, by slow Morse code, in order to let amateurs everywhere copy direct. This was done at 7 a.m. GMT, and everybody knew within hours how well many were doing. A summation of the entire undertaking is to be found narrated in the January and February, 1922, issues of QST, with both Godley and Coursey reporting in detail.

Many of the English amateurs, as well as some French and other stations, reported copying American signals. According to Godley, 22 CW and 6 spark stations were heard. The stations who made the grade are listed in **Table 1**.

Godley had set up his receiving station in Ardrossan, a small fishing village twenty miles to the west of Glasgow, Scotland. He chose this location in northern England rather than a location near London, knowing that the previous effort had gone astray primarily because of regenerative receivers used in early 1921 causing a great deal of heterodyne interference.

To the credit of a group of American amateurs determined to make a success of the opportunity offered, a station was built from the ground up, starting on November 19, 1921. Shortly after, Godley departed for England on December 15 on the Aq*uitania,* with the parting words to his well-wishers, "Please build a station that will get over there."

Six amateurs pooled their enthusiasm and assembled a station using the latest techniques known, with the most advanced pieces of equipment available. They constructed an aerial system considered to be the best layout in theory and design for 200 meter radiation. The station was located in Greenwich CT, licensed 1BCG, the call of Mr. Cronkhite, who was one of the six.

The transmitter was initially put in operation on December 6, 1921. To inspect its performance, an agreed-upon long CQ was started on December 7th at 3:30 a.m. that lasted until 4:30 a.m. This was the first day of the transatlantic tests. From the records of the log kept by Godley, these first signals were not heard. The log kept by Godley between the 8th and the 16th, monitored and checked by a Mr. Pearson, an observer, had the following statements repeated very often:

"Weather wet and boisterous, find atmospherics very heavy—harmonics jamming reception—reception conditions very sporadic—having to fight heavy static continuously—the interference from many stations is almost constant ..."

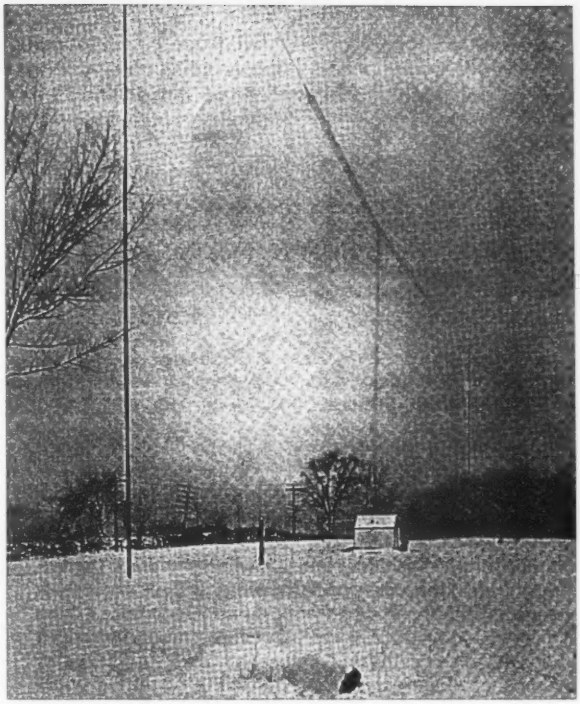

Photo A. *General view of 1BCG showing the station building, the masts, and the antenna system. The mast to the right is 100 feet high, the one at the left is 80 feet. The antenna is of the so-called cage type, T-shape, a new form of aerial construction, at the time, which was especially effective in continuous wave transmission because of its uniformity. The flattop section of this antenna is 100 feet long, and its down lead is placed in the exact center and is about 80 feet long. Instead of a ground connection, a counterpoise forms the other part of the radiating system. The counterpoise is simply a secondary antenna system located a certain distance below the actual antenna and a certain distance above the ground.*

It is interesting to read about these adverse conditions under

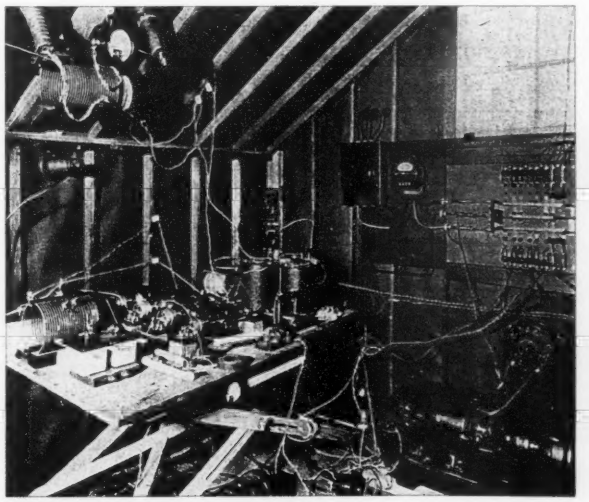

Photo B. *Interior view of the station.*

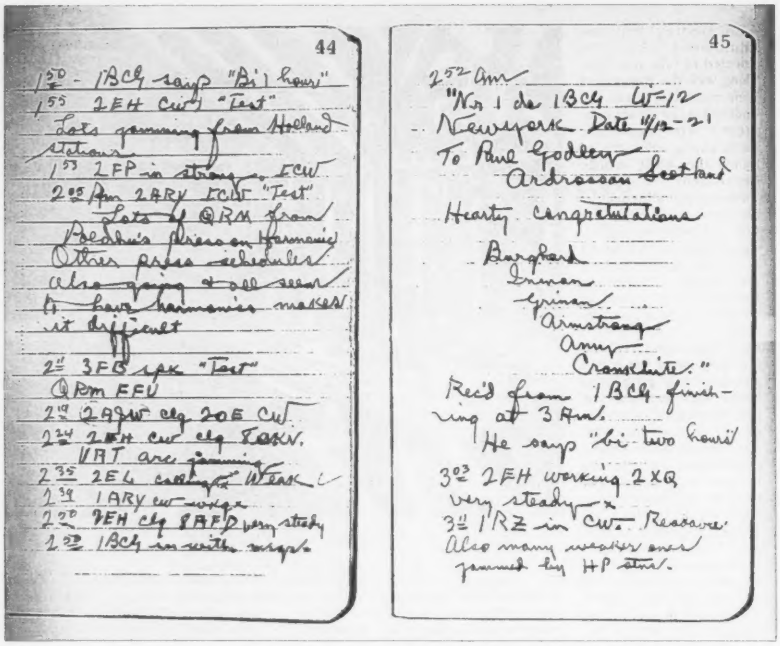

Photo C. *The first message. This is a facsimile of pages 44 and 45 from the original log kept by Paul Godley in Ardrossan, Scotland, showing the now famous "Nr. 1" as he copied it from station 1BCG at 2:52 a.m. GMT on December 12, 1921. This 12-word message was the first ever to be sent across the Atlantic on shortwaves.*

which Godley and his observer had to operate. Their receiving equipment was located in a large tent out in an open field near the seashore. The wind, rain, mist, and chilling breezes made the situation very unpleasant. Since it was December, the temperature was usually in the 30s, and they had no heat except a small oil stove. Keeping constant vigil was a trial, a severe test of endurance.

The receiving antenna was a 1300-foot longwire Beverage. It was strung up on ten twelve-foot-long wooden poles, not too firmly set into soft soil (which was covered with seaweed and very slippery to walk on). The cold rain and heavy squalls gave the men what came naturally under such conditions — a heavy cold and near pneumonia. As Godley aptly logged the situation, "A continuous fight against static and harmonic and cold and wet that drove one almost crazy."

The receiving equipment consisted of a Paragon regenerative receiver, together with a type DA-2 detector amplifier and a super-heterodyne receiver using ten tubes, a resistance-coupled amplifier, and an external beat oscillator. This equipment was chosen as being the best possible for both sensitivity and selectivity. Godley's aim in his receiver selection was to find an answer to the secrets of the Armstrong regenerative circuit, especially when reception of CW versus damped waves was concerned. This was a problem, one of the major ones, in the early 1920s.

Then, on the night of December 11, the signals from 1BCG came booming through with clarity and volume over much QRN and other interference. The message was logged by Paul Godley:

"Nr 1 de 1BCG words 12, New York, December 11, 1921: to Paul Godley, Ardrossan, Scotland. Hearty congratulations. Burghard, Inman, Grinan, Armstrong, Amy, Cronkhite."

The story on the success of 1BCG in all of its details may be found in a booklet entitled The S*tory of the First Trans-Atlantic Short Wave Message*, published by the Radio Club of America, Inc. The message transmitted on the night of December 11, 1921, and acknowledged by cable to the ARRL headquarters by Godley was the first message to cross the Atlantic by shortwave amateur radio.

Call	Place	Type	Wave	Cypher
1AFV	Salem MA	CW	200	YLPMV
1TS	Bristol CT	CW	200	AOTRB
1RU	W. Hartford CT	CW	200	BPUSC
1DA	Manchester MA	CW	200	CQVTD
1AW	Hartford CT	Spk	210	DRWUF
1BCG	Greenwich CT	CW	230	GODLY
2BML	Riverhead NY	CW	200	FSXVG
2FD	New York NY	CW	200	GTYWH
2FP	Brooklyn NY	CW	200	HUZXJ
2OM	Ridgewood NJ	Spk	200	JVAYK
2EL	Freeport NY	CW	200	KWBZL
3DH	Princeton NJ	CW	210	LXCAM
4GL	Savannah GA	CW	200	MYDBN
3BP	Newmarket ON	Spk	200	NZFCO
8DR	Pittsburgh PA	CW	200	OAGDP
9KO	St. Louis MO	Spk	200	PBHFQ
9AW	Toronto ON	CW	200	QCJGR
1ZE	Marion MA	CW	375	RDKHS
2ZL	Valley Stream NY	CW	325	TGMKU
3ZO	Parkesburg PA	CW	360	UHNLV
5ZZ	Blackwell OK	Spk	375	VJOMW
6XH	Stanford U. CA	CW	375	WKPNX
7ZG	Bear Creek MT	Spk	375	XLQOY
8XK	Pittsburgh PA	CW	375	YMRPZ
9ZY	Lacrosse WI	CW	260	RZQMY
9ZN	Chicago IL	Spk	375	ZNSQA
9XI	Minneapolis MN	CW	300	SFLJT

Table 1. *First Transatlantic stations.*

Now that this endeavor was successfully accomplished, an amateur fraternity grew in spite of amateurs being relegated to the short wavelengths of 200 meters, where it was considered impossible to carry messages to any great distances with a power input not to exceed 1000 watts. The event

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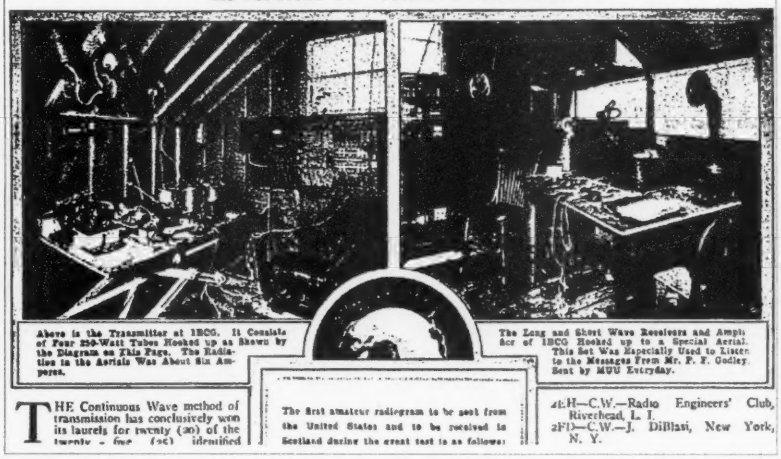
Amateurs Span the Atlantic

As reported by PIERRE BOUCHERON



Above is the Transmitter at 1BCG. It Consists of Four 250-Watt Tubes Hooked up as Shown by the Diagram on This Page. The Radiation in the Aerials Was About Six Amperes.

The Long and Short Wave Receivers and Amplifier of 1BCG Hooked up to a Special Aerial. This Set Was Especially Used to Listen to the Messages From Mr. F. F. Godley. Sent by MTU Everyday.

THE Continuous Wave method of transmission has conclusively won its laurels for twenty (20) of the twenty-four (24) identified

The first amateur radiogram to be sent from the United States and to be received in Scotland during the great test is as follows:

4EH—C.W.—Radio Engineers' Club, Riverhead, L. I.
2FD—C.W.—J. DiBlasi, New York, N. Y.

Photo D. From the front page of the February 1922 Radio News. *Photos of Station 1BCG.*

opened the door to bigger doings. The part played by amateurs, and exclusively by amateurs, in sending a message across the Atlantic with their simple homemade equipment was now recorded history. The distance covered was several thousand miles. Not until about 1926 were commercial circuits of a practical nature inaugurated on shortwaves, several years after amateurs had explored and demonstrated that the higher frequencies below 200 meters were feasible and practical and of real value in long-distance communication.

What happened in December, 1921, marked a turning point in radio history. What had appeared in books and been propounded in theory up to now, this "knowledge of the art," was now disproved. A new field of investigation was opened up for exploration. Through experiments, amateurs tackled the unknown ether bands and came up with answers.

In the next part, I will explore the part amateurs contributed to the early days of radio broadcasting. 73

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Field Day 2000 with the Xerox ARC

Where every signal was — ahem! — *easy to copy?*

Field Day is an annual weekend of fun: staying up all night, no shaving, no shower for 24 hours, and usually all of the contacts you would ever hope to make.

The typical ham Field Day involves a lot of preparation and coordination in advance of the event. Of course, the objective is to set up and operate ham equipment in temporary locations, simulating an emergency situation.

To be different from past Field Day events and to return to the intent of the event, the XAR (Xerox Amateur Radio) Club in El Segundo CA decided to try something a little different, with the premise of responding to an unannounced emergency condition — in other words, emergency preparedness.

Was the club ready for an emergency?

Was the needed equipment available?

Were there trained operators available?

What was needed to set up quickly?

So, how do you find out? To answer the question, each member participating in the event was asked to arrive at the Field Day site with only the items/equipment carried to work on a normal day. **Photo A** shows the site immediately prior to the arrival of participants and the communications van.

Because of the emergency preparedness objective, the club elected to operate for only the first six hours of the normal 24-hour period allotted for Field Day. It was deemed more important to trade contact points for a test of preparedness and for weakness identification.

It was assumed that setting up on the low bands would provide the opportunity to communicate beyond

Photo A. *The site immediately prior to the arrival of participants and the communications van.*

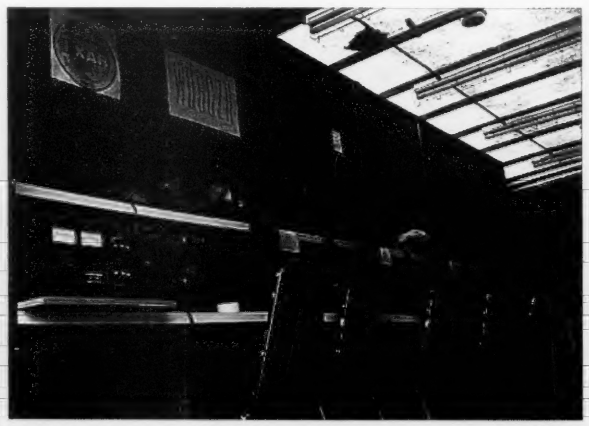

Photo B. *Equipment and operating positions set up inside the van.*

Photo C. *Chris KF6RSV, operating the solar powered station. The vertical antenna was taped to a camera tripod, creating a stable mount as well as a ground plane for the antenna.*

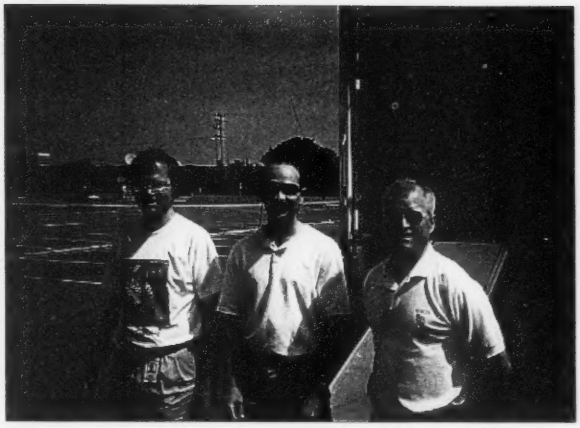

Photo D. *Dave AE6DR, John KM6JV, and George N6RVC were available as operators for the Field Day 2000 event.*

the confines of a local/area disaster. The VHF and UHF bands would work well for local communication in time of need.

Equipment

One fortunate advantage afforded the XAR Club is the use of a mobile van housing most of the equipment required for ham operation. Both 12 VDC and 120 VAC of emergency power are available to run equipment. A 5 kW motor-generator, normally stored in one of the van's compartments, was moved away from the van to reduce the audible noise. Radio equipment belonging to the club and individual hams, is occasionally stored in the van or in the company ham shack located in one of the buildings. As a result, sufficient equipment was available within a short period of time for the Field Day exercise.

Not all of the available equipment was needed during the Field Day event, because the club elected to operate Class 2A. Equipment for the 144, 220, and 450 MHz bands was also available, but was used only for club member communication and coordination. **Photo B** shows the equipment and operating positions that were set up within the van.

Operations

Operation was set up for both phone and CW on 40, 20, and 15 meters. In addition to the two low-band stations, a solar-powered 2-meter station was set up and operated. **Photo C** shows Chris KF6RSV operating the solar powered station. The vertical antenna was taped to a camera tripod, creating a stable mount as well as a ground plane for the antenna.

Photo D shows the three operators available for the Field Day 2000 event. They were Dave AE6DR, John KM6JV, and George N6RVC. Members available for the setup and teardown operations, shown in **Photo E**, were Art KD6JEG, Norm K6YPD, Hugh W6WTU, Johnny WB6HYR, and Chris KF6RSV. **Photo F** shows the antennas being unloaded and spread out for assembly, while **Photo G** shows them assembled and operating. **Photo H** shows the operators making contacts.

Setup

A three-element 10-15-20 meter beam, hooked to the rear of the van shown in the photos, is stored within the van when not in use. An all-band trapped vertical antenna can use the same mount where the beam is shown. For this Field Day event, a 40-meter

Photo E. *Art KD6JEG, Norm K6YPD, Hugh W6WTU, Johnny WB6HYR, and Chris KF6RSV were available for setup and teardown operations.*

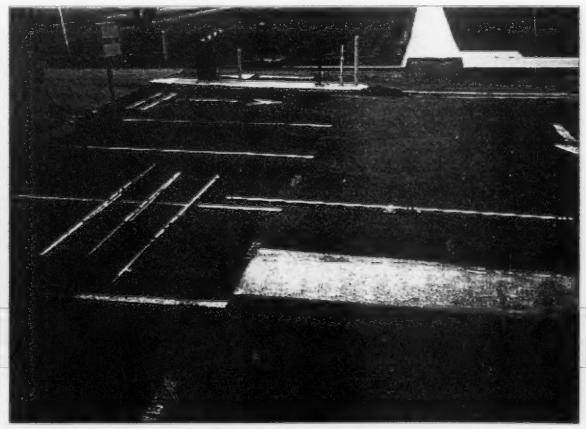

Photo F. *The antennas being unloaded and spread out for assembly.*

Photo G. *These antennas are up and operating.*

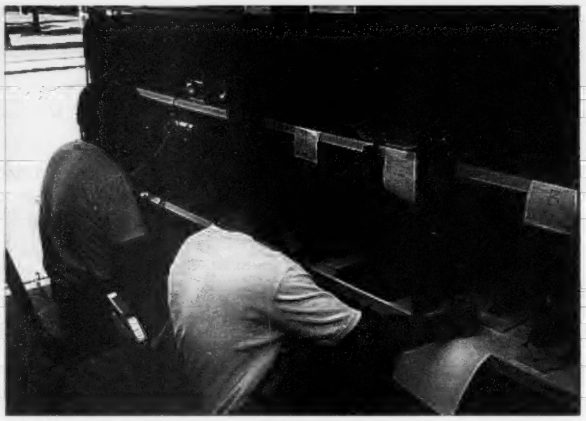

Photo H. *Field Day contacts are in progress.*

dipole was strung over the top of two Y-shaped parking lot light standards (**Photo I**).

VHF and UHF antennas can barely be seen along the upper roof line (driver's side) of the van. Each antenna is mounted with a hinge, allowing it to be flipped up for use, or lowered for storage.

Photo J shows the van at the end of the exercise and after everything had been packed up. The van was ready for return to its normal parking location.

Locations for a Field Day event are usually selected for height above the local terrain, a low electrical noise level, and a clear radiation pattern in a desired direction. However, such a desired location might not always be available during an emergency. XAR took that into consideration and elected to use the company parking lot, as it was assumed that in the case of an emergency, most club members would be on site and would break away from work to participate in emergency communications while staying on site.

During the Field Day 2000 event, the site electrical noise level ran in the 1–2 S-unit range, even though the antennas were in close proximity to power lines. Although the site was not ideal for a high contact point count, it was quite satisfactory for a "real" emergency situation. Making contacts outside of Los Angeles County was easy. Strong signals from Illinois and Indiana provided an excellent test of the parking lot location. A total of 182 contacts were made from coast to coast, including Canada.

Results

Yes, the club's objective of being able to set up and operate without extensive preparation was met using only the equipment stored within the van. Approximately two hours were required to get set up completely and to perform desired equipment testing.

Working with a limited number of tools did present a small hardship. The use of a Swiss Army knife, an adjustable end wrench, and a screwdriver saved the day.

Although no major issues were exposed, many strengths and weaknesses were identified. Lessons learned from the exercise boiled down simply to the following:

- Train club members to use all pieces of equipment.
- Set up and use equipment periodically.
- Mark antennas with band set marks for quick and easy assembly.
- Organize and inventory accessory

Continued on page 57

Photo I. *A 40-meter dipole was strung over the top of two Y-shaped parking lot light standards.*

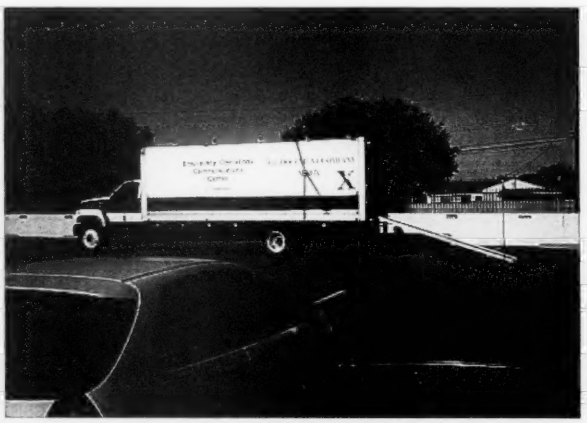

Photo J. *Field Day 2000 is over, and everything has been packed up. The van is ready for return to its normal parking location.*

Dan Metzger K8JWR
6960 Streamview Dr.
Lambertville MI 48144

Field Day Follies

Wherein some Yankee feds and some Zulus use an x-ray machine to bust up an old man's still — or something like that.

The only thing that saved me from death by boredom that June of 1962 was the fact that I had stumbled onto a local teenage radio club. I was 18, and my family was visiting relatives I didn't know in the foothills of Georgia. When the last Saturday of June arrived, I assured Mom once again that it was my civic duty to participate in the emergency preparedness exercise, and that I would be back Sunday around midafternoon.

The Field Day site was a sandy clearing in a state forest, apparently frequented by the Boy Scouts, for there was a fine, tall flagpole in the middle that was much sought after as an antenna support by the dozen of us who showed up. By early afternoon, we had climbed the necessary trees (and the flagpole), pitched the tents, and fired up the generator — when the army showed up.

It was a reserve unit — weekend warriors — on maneuvers. Along with jeeps and other vehicles, they had a thing that must have been the inspiration for today's monster trucks: BIG tires. They wanted to check it out in a sand pit at the edge of the clearing, so they had to ask us to move some guy wires.

While they were running it through the pit, a friendly argument broke out between the hams and the soldiers over whether that truck really could get through anything. The hams maintained that if somebody just dug a little depression at the edge of the pit, the thing would bottom out and get stuck. The only way to resolve the dispute was to try it, so a number of idle hams set to digging, while the troops left, promising to return Sunday morning and drive right through it.

As the evening's activities heated up, it became clear that a major rivalry was developing between the guys in my tent, working 40 meter CW, and the guys in Denny's tent, on 20 sideband. Denny was quite the showman, and had taped a pair of two-foot fluorescent tubes to the ends of his dipole. As it grew darker, it was quite an eerie sight to see those two blinking eyes, 30 feet apart and 40 feet in the air, against the black shapes of the trees. Rather brought Godzilla to mind.

Along with the darkness came the revelation that the road leading up to our clearing was something of a local lovers' lane, for we saw several cars pull to the side and turn out their lights, and we very much suspected that the people in them were doing that which their mothers had told them they must never do.

I guess it was about 11 o'clock when, feeling the call of nature, I began making my way a few feet into the woods behind Denny's tent. From somewhere in front of me I heard a car door shut, and someone with a heavy southern drawl said, "Get back in the front, and be ready to go." Behind me, Denny was running quite a pileup, picking off stations in their turn, and I heard a sideband with a distinct New England twang say from the speaker, "I finally got you, old man. Whiskey Four X-ray Zulu Yankee this is ..." Then the generator coughed and died, and the woods went pitch black and strangely quiet.

I moved around uncertainly for a minute, for I was no longer perfectly sure which was the way back to the clearing. Then there was a rustling in front of me, and immediately I was confronted with the owner of the southern drawl.

"We'd better get out of here," he said. "I think it's the federals. They've got a big x-ray machine. I saw it flashing and snuck up and heard 'em talkin'. There's stills back in these woods, and they got an old man and his whiskey. There's Yankees and

Continued on page 57

This story originally appeared in *The Hertzian Herald*, newsletter of the Monroe County (MI) Radio Communications Association (MCRCA). It reportedly is fiction.

Parker R. Cope W2GOM/7
8040 E. Tranquil Blvd.
Prescott Valley AZ 86314

Radio Brat

A life in uniform has meant a world of contacts for this devoted op.

In 1951, retreads who were knowledgeable radio operators were welcomed by the Navy. Bill Jackson certainly fit the bill. Bill had joined the Signal Corps in 1941, served in the 112th Signal Radio Company, and become an accomplished radio operator. The ham bug hadn't bitten Bill, although he knew several hams at Camp Crowder MO, where he taught Morse code, radio procedures, and transmitters. The ham bug didn't bite until after his separation from the Army in 1945.

In 1947, he met Herb Evans W4LKT, now a silent key, who was his Elmer. Herb introduced the theory and practice of amateur radio. Bill was hooked.

Even with all of his radio experience, taking the FCC test in 1948 at the Federal Building in Miami FL was still a challenge. After a couple of tries he received his class B call, W4NFD.

Bill's first rig was an 813 amplifier in the top of an empty rack. After a lot of rework with Herb's generous help, Bill soon added to the rack a 2,000 volt power supply and a modulator consisting of a pair of 811s in class B. He was off and away. Eighty and forty meters were popular bands, but 20 meter CW was Bill's place of choice. Band changing was not achieved with the flip of a switch; plug in coils with link coupling was de rigueur. Load and tune, load and tune, and finally 250 watts. SWR meters were unheard of at the time, and tuning the impedance presented by the transmission line was an unavoidable activity. Being rockbound was almost an advantage.

The original antenna, 33 feet of #14 wire on a bamboo pole for 20 meters, was finally rounded out by a ten meter Workshop Beam by World Radio Labs. The old Hallicrafters S-40A receiver gave great service, but its stability left a lot to be desired; the wide IF was needed so that even when it drifted, the signal would still be in the bandpass. The sensitivity was pretty good for its day, but by today's standards it was nothing to write home about. Bill wasn't exactly a lid, but there was a lot he needed to learn about the world of ham radio.

The awesome propagation in the late '40s opened ten meters to all parts of the world. Bill found raising Europe almost as easy as bringing up today's local repeater. What a grand time to be a ham.

After leaving the Army in 1945, Bill joined the Naval Reserves in 1948, in the Naval Security Group as a third class petty officer. He was called up in 1951 during the Korean affair to begin a 22-year naval career. After a six-month cruise in the Mediterranean,

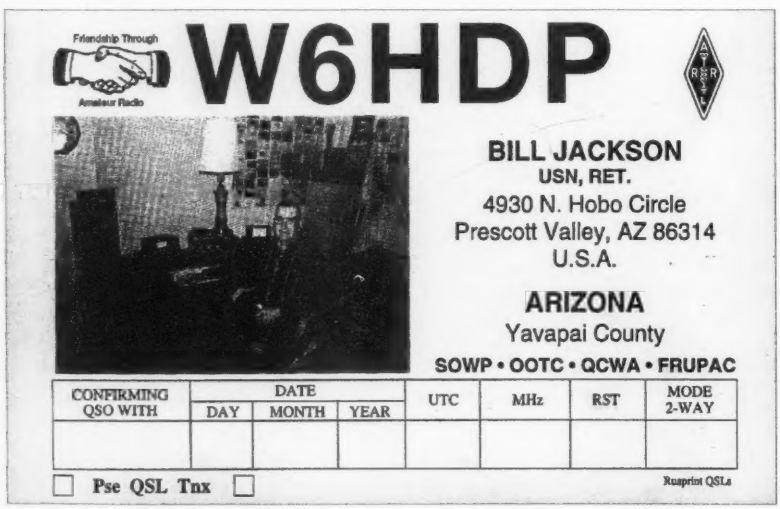

Fig. 1. Bill Jackson's QSL card.

he was stationed in Washington DC with the National Security Agency. Needing a ham station, he horse-traded for a Hammarlund Comet Pro and a Stancor 110-C transmitter. This and a dipole antenna put him in business on 80 and 75 meters, passing traffic on the Transcontinental CW net and acting as NCS on the Emergency Phone net with some participation in MARS (Military Affiliate Radio System).

In the early '50s, the MARS nets were just getting started, but most hams weren't participating. Petty Officer Jackson, along with six other hams, was summoned to a meeting at the Pentagon to see about resolving the problem. The meeting led to a system whereby hams who checked into the nets received points that they could use to buy surplus military radio equipment. A lot of this equipment was converted to operate on the ham bands as well as the MARS frequencies.

The flow of surplus military equipment after WWII was a godsend to the ham fraternity; state-of-the-art radio equipment for practically nothing was a boon not to be repeated. Of course, it did nothing good for the makers of amateur equipment, but hams reveled in it.

The Navy was not one to allow anyone to settle down for very long, so after three months of Navy school at San Diego in Signal Radio Intelligence, Bill was transferred to the Philippines for duty at Sangley Point.

At Sangley, a Chief Petty Officer was setting up a base MARS station. The restrictions on amateur radio operations at the time prevented Americans from operating in the ham bands. MARS was the next best thing. Obtaining an Air Force MARS license was in order, and Bill was given the call AI4GC.

Shortly after Bill arrived, the Chief working on setting up the MARS station was transferred to Collins Radio School, and Bill had to complete the job. Meanwhile, eight refurbished BC-610 transmitters had been shipped from Stockton CA. Of course, they weren't set to operate on the MARS frequencies, so Bill modified them. The MARS station finally got on the air and started making phone patches back to the States.

MARS was the only reasonable way for the Navy personnel on TDY (temporary duty) to talk with their families stateside. Many five minute phone patches were made through K6AF, at George AFB in Victorville CA. The patches to families back stateside were a great morale booster for the sailors and aviators. (Navy aviators aren't called pilots; pilots guide ships into and out of port.) The Sangley Naval Air Station was turned back to the Philippines after Bill's reassignment to Japan. The base station that was sweated over was not used after the base was returned to the Philippines.

Operating in Yokohama, Japan, as KA2WJ put Bill at the other end of the DX, and hamming was truly exciting. Ham operations were mainly restricted to the weekends, but many stateside contacts were made and QSLs sent, maybe adding a new country to someone's list.

Back in the States in Washington DC in 1958, ham radio for Bill took on a different look. He traded his BC-610 for a Viking I and a Heath DX-100. The Viking was an excellent AM transmitter with full plate modulation. With the SX-28, the station took on a nice polished look. The skywire was a cubical quad built for 10 and 15 meters. He logged 99 countries from there.

Again, the Navy couldn't let their personnel put down roots, and Bill was transferred to Cyprus. At first it seemed like another chance to be hunted DX. But it was not to be. The Cyprus communications department was totally disorganized and foreigners weren't able to get amateur operating privileges. There, ham radio took a turn for the worse for two years. Copying radio traffic kept his CW skills sharp, but quiet hours for two years were not a happy time for a ham.

Things came back to life for Bill in a transfer to Port Lyautey, Morocco. Licensed as CN8GC, Chief Jackson put the Heath DX-35 kit built in the Philippines and a Hammarlund-110 receiver to good use. Never quite satisfied, like most hams, he built a 10-15 meter quad and a 10-15-20 mini

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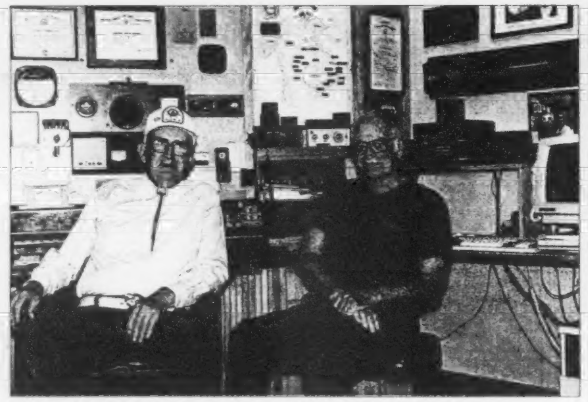

Photo A. *Bill Jackson and Barry Goldwater in 1990.*

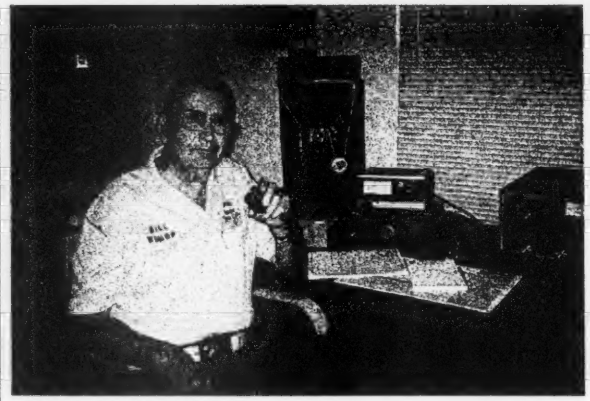

Photo B. *W6HDP/7 today.*

beam. He completed the station with a Knight T-150 transmitter. CN8GC was a sought-after contact.

Bill and his wife Ann came back to the States in 1964, to Key West FL. A Drake TR-4 and a Hustler antenna now allowed him to work SSB with the old call W4NFD. The Drake is still a revered piece of gear, but economics being what they are, Drake has been forced to abandon the amateur market.

After 22 years in the service, retirement was in order, and California beckoned Bill. A new callsign, W6HDP, and a new job as a computer electronic tech, permitted a Tempo One and later an Atlas 210-X mobile to grace his shack. Wanderlust struck, and the Jacksons RV'd around the country with the Atlas and Hustler antenna, until Bill and Ann migrated to Phoenix AZ in the '80s.

Bill gravitated to a Kenwood TS-180-S and a Dentron amplifier and tuner, and continued to pursue his love of amateur radio.

In March of '87 Bill assumed the directorship of the Southwest Chapter, SOWP (Society of Wireless Pioneers). As an active member of QCWA (Quarter Century Wireless Association), Bill helped arrange a joint 1988 holiday luncheon meeting between the Arizona QCWA chapter 16 and SW Chapter of SOWP. Leo Meyerson WØGFQ, founder of World Radio Labs, entertained the gathering with stories of his days playing piano and organ for silent movies, and of how he organized Wholesale Radio Labs in 1935, and after WWII, World Radio Labs.

Later meetings of QCWA and SOWP featured speakers like Barry Goldwater K7UGA, Dave Bell W6AQ, who produced the film "World of Amateur Radio," Dick Baldwin W1RU, past president of IARU, and Lew McCoy W1ICP, technical editor of *CQ* magazine.

The meetings were discontinued in 1998, when Bill resigned as Southwest director. Of course, ham radio wasn't a hot commodity either, but it struggled on. The magazines devoted to ham radio fell on hard times, and their number decreased to today's few.

During hurricane Andrew and the 1989 earthquake, Bill spent many hours as net control passing health and welfare traffic, thus fulfilling one of amateur radio's purposes

Bill believes the new FCC license restructuring will bring in new blood. While he is an avid CW practitioner, the cry "CW forever" is a lost cause here and around the world. But the joys of amateur radio can still be enjoyed by millions. CW may actually bloom again when newcomers realize CW need not cost an arm and a leg, and a CW QRP rig can be built for a fraction of the cost of a new SSB transceiver. CW may be an option that can't be ignored.

Chief Jackson was awarded two battle stars for landings in the Pacific, the Presidential Unit Citation for the initial landing on Luzon in the Philippines, and the pre–Pearl Harbor American Defense Medal.

Amateur radio has filled many pleasant hours for Bill and led to many long-lasting friendships. Precious memories that could have been made no other way were made through amateur radio. Bill still keeps in touch with his friends and shipmates on the FRUPAC (Fleet Radio Unit Pacific) net on 40 meters, and has schedules on 20 meters every Monday and Thursday. He is a very active ham who signs into 13 different nets on CW and phone. Bill is also a VE (Volunteer Examiner) with the Yavapai Amateur Radio Club in Prescott AZ.

Bill lives in Prescott Valley AZ with his wife Ann. His E-mail address is [w6hdp@primenet.com]. 73

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CALENDAR EVENTS

Listings are free of charge as space permits. Please send us your Caalendar Event two months in advance of the issue you want it to appear in. For example, if you want it to appear in the September issue, we should receive it by July 5. Provide a clear, concise summary of the essential details about your Calendar Event.

JUNE 2

SPRINGFIELD, IL The Sangamon Valley Radio Club Hamfest will be held at the Illinois State Fairgrounds Cooperative Extension Building in Springfield, rain or shine. From I-55 take Sangamon Ave. west to the Illinois State Fairgrounds. Stay on Sangamon Ave. past the main gate. Go to the next gate (Gate 11). Enter Gate 11 and drive straight back to the Cooperative Extension Building. Talk-in on 146.685 MHz(-.600). Tickets $5 each, or 3 for $10. No additional charge to set up in the 100,000 sq. foot covered flea market area. Limited indoor tables may be available. Contact *Ed Gaffney KA9ETP, 13977 Frazee Rd., Box 14A, Divernon IL 62530; tel. (217) 628-3697; or E-mail [egaffney@family-net.net].* For more info about the Sangamon Valley RC, this hamfest, or obtaining an amateur radio license, please visit *[WWW.W9DUA.NET].* This hamfest is co-sponsored by Shooting Stars 4-H. Food service provided by Shooting Stars 4-H.

JUNE 3

CHELSEA, MI The 23rd Annual Chelsea Swap, Ham and Antique Radio Swap, will be held on June 3rd in Chelsea MI, at the Chelsea Fairgrounds on Old US 12 at M-52 in Chelsea. Gates open at 6 a.m. for sellers; 8 a.m. for the public. Donation is $4 in advance, $5 at the door; under 12 free. Plenty of parking; easy access from I-94. Talk-in on 145.450(-), WD8IEL Chelsea rptr. Trunk sales $5 a space. Table space, $10 per 8-ft. table. Handicap access. For reservations and more info, E-mail *[WD8IEL@hotmail.com];* or contact *Bill Altenberndt WB8HSN, 19501 Bush Rd., Chelsea MI 48118.* Sponsored by the Chelsea ARC, Inc.

MANASSAS, VA Virginia's Ole Fashioned Manassas Hamfest, amateur radio, computer and electronics show, will be presented by the Ole Virginia Hams ARC, Inc., at Prince William County Fairgrounds, 1/2 mile south of Manassas, on Rte. 234. Talk-in on 146.97(-), 224.660(-), and 442.200(+). General admission is $5 per person at the gate. No advance sale. Gates open at 7 a.m. Free parking. Indoor exhibitor space with 8-ft tables, $30 each with chairs and electricity. Tailgating $5 per space (plus admission), gates open at 6 a.m. Setups 2 p.m.–10 p.m. Saturday, June 2nd. Ample room for everyone. For VE exams, contact Ruth KU4WH, tel. (703) 331-1234; or E-mail [Frizzy2@aol.com]. Features: ARRL Roanoke Div. officers and 4th Call Area QSL Bureau reps will be present; DXCC QSL card checking; Virginia QSO Party Awards Ceremony. Food vendors must have prior written approval from the Hamfest Chairman. For dealer info, contact *Jack N4YIC, tel. (703) 335-9139; fax (703) 330-7987; E-mail [N4YIC @arrl.net] or [patnjack@erols.com].* For general info, contact *Mary Lu KB4EFP, tel. (703) 369-2877, E-mail [mblasd1638@ aol.com].*

QUEENS, NY The Hall of Science ARC Hamfest will be held at the New York Hall of Science parking lot, Flushing Meadow Corona Pk., 47-01 111th St., Queens NY. Doors open for vendors to set up at 7:30 a.m. Buyers admitted at 9 a.m. Free parking. Food and refreshments available. VE exams at 10 a.m. Admission by donation, buyers $5, sellers $10 per space. Talk-in on 444.200 rptr., PL 136.5 and 146.52 simplex. For more info, call at night only, *Stephen Greenbaum WB2KDG, (718) 898-5599, E-mail [WB2KDG@Bigfoot.com; or Andy Borrok N2TZX, (718) 291-2561, E-mail [N2TZX@webspan.net].* For VE exam info, contact *Lenny Menna W2LJM, (718) 323-3464, E-mail [LMenna6568@aol.com].*

JUNE 10

BETHPAGE, NY The LIMARC Spring 2001 Electronics Hamfair and Flea Market will be held at Briarcliffe College, 1055 Stewart Ave., Bethpage NY, beginning at 8:30 a.m. Gates open at 7 a.m. for vendors. General admission is $6, children 12 and under accompanied by a paying parent, and non-ham sweethearts will be admitted free. For more info, visit the *LIMARC Web site at [http://www.limarc.org], or call the 24-hour info line at (516) 520-9311.* Talk-in on the 146.850 rptr. PL 136.5. *E-mail [hamfest@limarc.org].*

WHEATON, IL The Six Meter Club of Chicago, Inc., will hold its 44th Annual Hamfest, a ham radio and electronic flea market which also features antique and vintage radios. The event will take place Sunday, June 10th, at DuPage County Fairgrounds, 2015 Manchester Rd. (north of Roosevelt Rd. [Rte. 38], east of County Farm Rd.). This hamfest will be held rain or shine. ARRL and dealer displays. Free parking, no extra charge for space in outdoor flea market. Limited overnight RV parking with electrical hookup — $10 each by advance registration, required by May 25th. Advance tickets $5 each, $6 at the gate. Advance tickets available from *Joseph Gutwein WA9RIJ, 7109 Blackburn Ave., Downers Grove IL 60516,* or any club member. For info call the *24-hour InfoLine at (708) 442-4961.* General parking at the West Gate; sellers ONLY at the East Gate. Handicap parking, use East Gate. Gates open at 7 a.m., buildings open to the public at 8 a.m. Talk-in on K9ONA 146.52 or K9ONA/R 146.37/.97 (107.2). Commercial tables 8 ft. w/ 110V in main bldg., air cond., $12 before April 30th, $15 after. Indoor flea market tables, 8 ft., no electric, $10 before April 30th, $12 after. ARRL VE exams 9 a.m.–11 a.m.; call the InfoLine to pre-register for testing. Make check payable to *Six Meter Club of Chicago,* and send with SASE to *Six Meter Club of Chicago, 7109 Blackburn Ave., Downers Grove IL 60516,* no later than May 25th. Absolutely no alcoholic beverages permitted. All sellers are responsible for cleanup of their spaces. No sales of food or beverages permitted.

JUNE 16

DUNELLEN, NJ W2QW, The Raritan Valley Radio Club of Martinsville NJ, will hold a Hamfest at Columbia Park, near the intersection of Routes 529 and 28, 7 a.m.–2 p.m., June 16th. Sellers set up at 6 a.m. Admission: Buyers $5, sellers $10 ($5 each additional space). Talk-in on 146.625(r), 447.250(r), 447.250(r) tone 141.3, and 146.520 simplex. Contact *Doug Benner W2NJH, (732) 469-9009, [WB2NJH@ AOL.COM);* or *Fred Werner KB2HZO, (732) 968-7789, before 8 p.m.*

JUNE 17

MONROE, MI The Monroe County Radio Communications Assn. will hold its annual "Monroe Hamfest" 7:30 a.m.–1 p.m., at the Monroe County Fairgrounds, 2 miles west of Monroe on M-50. Indoor tables $15 for first 8-ft. table and 1 ticket, $10 each additional table. Trunk sales $6 for 8-ft. space. Overnight camping $15. Free parking. Refreshments will be available. Talk-in on 146.72. Advance tickets $6, includes two stubs for drawing; $6 at the door, with one stub. Contact *Fred VanDaele*

Continued on page 40

CALENDAR EVENTS

continued from page 39

KA8EBI, 4 Carl Dr., Monroe MI 48162. Call (734) 242-9487 after 5 p.m., or E-mail [ka8ebi@arrl.net].

JULY 4

BRESSLER, PA The Harrisburg Radio Amateur Club, W3UU, will hold its Firecracker Hamfest in celebration of its 29th year, at Emerick Cibort Park, Bressler PA. Set up on July 3rd from 6 p.m.–9 p.m., or July 4th at 6 a.m. The park opens to the general public at 8 a.m. July 4th. 80 covered tables, all with electricity, only $12 each, prepaid by June 1st. All tables paid for after July 1st will be $15 each, prepaid on a first come first served basis. 48 hour cancellation notice required for refunds. Contact *Pete deVolpi K3PD, 408 Hillside Ave., New Cumberland PA 17070. Weekday phone (717) 705-1370, weekends and evenings 6–9 p.m. (717) 938-8249. E-mail [w3uu@aol.com].* See the Web site at *[http://members.aol.com/w3uu/].*

JULY 7

OAK CREEK, WI The South Milwaukee ARC Inc. will hold its 33rd annual Swapfest on July 7th, at American Legion Post #434, 9327 S. Shepard Ave., Oak Creek WI. The event will run 6 a.m.–2 p.m. CDT. Free parking. Picnic area and limited overnight camping are available with plenty of nearby hotels/motels. Hot and cold beverages will be served. Admission is $5 for buyers or sellers. This includes a free "happy time." Talk-in on 146.52 simplex as well as on many of the local repeaters. A flyer with map may be obtained by writing to The *South Milwaukee Amateur Club, P.O. Box 222, South Milwaukee WI 53172-0102.*

JULY 15

WASHINGTON, MO The 39th Annual Zero Beaters ARC Hamfest will be held Sunday, July 15th, 6 a.m.–2 p.m., at Bernie E. Hillerman Park (Washington Fairgrounds). Free parking and free admission. Technical sessions, ham radio and computer flea market, ham radio demonstrations. Talk-in on 147.24(+) rptr. Watch for green on white hamfest signs. VE exam registration starts at 9 a.m. Walk-ins welcome, limit 60. Bring original license and a photo copy. For info SASE to *ZBARC VE Exam, P.O. Box 1305, Washington MO 63090.* For hamfest info, contact *Zero Beaters ARC, P.O. Box 1305, Washington MO 63090; 147.24(+) rptr.; Keith Wilson KØZH, (636) 629-2264, fax (636) 629-1196;* or *Bob Goza WØBOB, (573) 484-3718, [wØbob@arrl.net].* Check the Web site at *[www.yhti.net/~wØbob/zbarc].*

JULY 22

SUGAR GROVE, IL The Fox River Radio League will hold their Annual Hamfest at Waubonsee Community College, Rte 47 at Harter Rd., Sugar Grove IL (5 miles NW of Aurora). Doors open Sunday at 8 a.m. Set up Saturday at 7 p.m., Sunday 6 a.m.–8 a.m. VE exams at 10 a.m. Bring original license, copy of license, and photo ID. Talk-In on 147.210(+) PL 103.5/107.2. Contact *Maurice L. Schietecatte W9CEO, c/o FRRL, P.O. Box 673, Batavia IL 60510. Tel. (815) 786-2860, or E-mail to [w9ceo@arrl.net].* The Web site is at *[http://www.frrl.org/hamfest.html].*

JULY 27–28

OKLAHOMA CITY, OK The Central Oklahoma Radio Amateurs will sponsor "Ham Holiday 2001" at the Oklahoma State Fair Pk., northeast of the I-40 and I-44 intersection. This will be their 28th annual event. The event will be held in the Hobbies, Arts & Crafts/Modern Living Building. Doors open Friday, July 27, 5 p.m.–8 p.m.; Saturday, July 28, 8 a.m.–5 p.m. Features: Technical and non-technical programs, WAS card check, VE exams, flea market. Advance tickets $7, $9 at the door. Flea market tables $10 in advance, $15 at the door (if available). Electrical hookup $5. Talk-In on 146.82. Additional info and registration forms are available on the CORA Web site *[www.geocities.com/heartland/7332].* Address other inquiries to *Ham Holiday 2001, P.O. Box 850771, Yukon OK 73085-0771; or E-mail [corahams@swbell.net].*

JULY 28

CINCINNATI, OH The 4th Annual OH-KY-IN Amateur Radio Society Hamfest will be held July 28, 7 a.m.–1 p.m. at Diamond Oaks Career Development Campus, 6375 Harrison Ave., Cincinnati OH. This facility is located just east of I-275 and I-74. Take I-74 to the Rybolt Rd./Harrison Ave. exit (Exit #11). Go east on Harrison Ave. Diamond Oaks is located on the right (south side) of Harrison Ave., less than one mile from the I-74 exit. Special seminars, transmitter hunts, indoor vendors, outdoor flea market — first space free with admission ticket, additional spaces $3 each. VE exams at 8 a.m., walk-ins accepted. Free parking; handicapped parking available. Talk-In on 146.670(-) and 146.925(-) rptrs. Advance tickets $5, $6 at the gate. Age 12 and under admitted free. Indoor vendor tables (6-ft. with free electric) $10 each. Contact *Lynn Ernst WD8JAW, 10650 Aspen Place, Union KY 41091-7665, tel. (859) 657-6161; E-mail [wd8jaw@arrl.net].* Web site at *[www.qsl.net/k8sch].*

SPECIAL EVENTS, ETC.

JUNE 6–10

BEDFORD, VA Old Dominion Chapter #202 QCWA and other area clubs will operate Special Event station WW2DDM, commemorating the dedication of the National D-Day Memorial in Bedford. Operation will be 1700–2400Z June 6–June 10. Contacts can be made on 7.050, 7.250, 14.050, 14.240, 21.050, 21.330, 28.050, 28.350, 50.222 and 144.222. Send SASE for QSL or certificate, to *Charlie Beckwith K4BSF, 563 Buzzard Rock Ln., Rocky Mount VA 24151-4844 USA.* For additional info see the Web site at *[www.usit.net/~pob/qcwa].*

JUNE 30–JULY 2

DeSMET, SD The Huron ARC, and the Lake Area Radio Klub, will host a special events station to celebrate the 30th Anniversary of the "Little House on the Prairie" Pageant. They will be on the air 1600 UTC June 30–0200 UTC July 2. Frequencies: 7.265, 14.265, 21.365, 28.465 and 50.165. To get a certificate or a QSL card, write to Huron ARC, P.O. Box 205, Huron SD 57350; or Bill Kerker [Wa0tdk @arrl.net]. Tel. (605) 352-1577.

JULY 20–22

IRVING, TX Seven members of The Jim Smith Society will operate station W9JSS at the 31st annual Jim Smith convention, July 20, 21 and 22, in Irving TX. The society has about 225 FCC licensed members. Contact W9JSS and receive a unique QSL card — one name with seven different callsigns. Try 14.280, 21.380 or 28.380 +/- QRM, 1530Z–1730Z all three days. Requests for a QSO on other bands, or other times, can be sent to [JimW*B9UKK@aol.com].* For more info about The Jim Smith Society, check the Web site at *[www.jimsmith2.org].* 73

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Join the Digital Revolution!

The message I see often on my monitor states a clear fact: "I haven't been this active in ham radio for years, I can't get enough of this digital stuff."

If there ever was a boon to the ham operator whose interests have waned, the digital revolution has provided it. I have conversed with many hams who have become suddenly ecstatic with these strange new computer-controlled (did I leave out inexpensive?) warbling modes that are so easy to get into and permit excellent worldwide radio communications with low power.

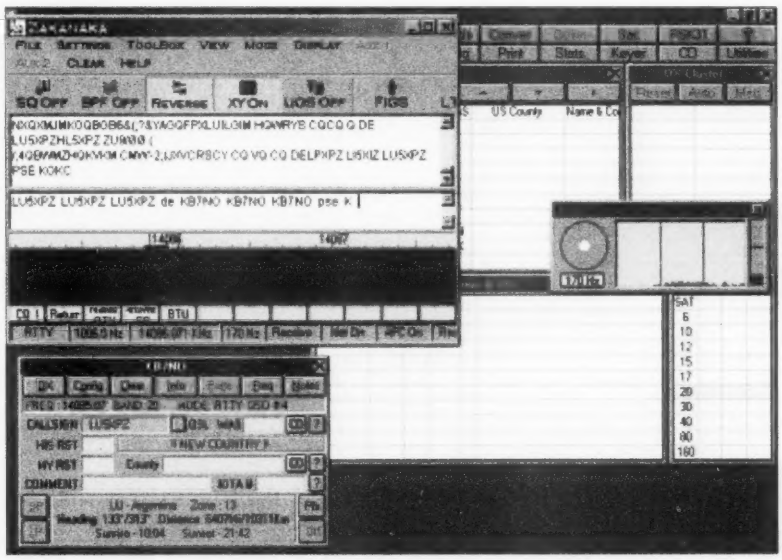

Fig. 1. Screenshot 1 — The MMTTY module included in Zakanaka is displayed at the upper left with Logger in the background. For those of us who are monitor challenged (15" diag.), this is a good arrangement and the software seems to be designed for this purpose. Logger displays the frequency from the rig which becomes the frequency at the left of the tuning pane. When you capture the other station's call it appears in the Logger entry pane and from that time is available for your macros. Capturing the name displays it in the Comments line and also is for use of your macros. Once you are finished entering the other station info you may, if you feel it necessary, maximize the communications panel and have full accessibility to all the controls. You may minimize the RTTY mode pane to the above size at any time to return to the layout as shown. Or you can pull and tug these panes around any way you wish for convenience; it is simply a Windows function. The little tuning window at the right has an oscilloscope display in it as well as the tuning capability. The two programs work hand-in-hand so the pertinent facts about the QSO are logged automatically as soon as you hit Enter. All the setup and tweaking available to MMTTY is available as well as setup with in the Zakanaka program. The documentation provided guides you through the whole process step by step. Nearly every default value and setting will be correct for you to get on the air immediately upon installation. You will mostly need to change settings that apply to your rig. Almost a plug-and-play operation. Very simple and straightforward. And FREE !

My beleaguered XYL, of course, simply puts these strange noises emanating from the shack as a further proof of my eccentricities. She is sure the house is much calmer when I unplug the speakers from the soundcard so she doesn't have to have her musically inclined hearing sensors "blasted" with the warbling.

She has a different description, not quite related to warbling, but we have a conflicting perspective as to which sounds are more pleasing. 'Nuff said — end of editorial. But the truth remains: Digital has caught on and is a resounding success, regardless of mode or software.

And ... some months, I feel the need to restrain myself from sending enough material to fill half this magazine. Poor Wayne wouldn't have room left for his famed editorials.

Well, enough of that. There is a lot going on out here in digital land. Last month, I gave you some info on a quickly evolving program for SSTV that is a freebie. The enthusiasm and the development process hasn't slowed since then.

I just downloaded the beta version .20 of MMSSTV. The upgrades are coming fast and furious these days. It seems it was only a month ago that we were using version .11 and, by the way, this runs on the 120 MHz CPU here but faster is recommended.

QRP digital

I was conversing with a QRP ham just the other day. One of those peculiar days when I heard no action on the 20 meter digital segment. I tuned haphazardly down to 14.063 and found the distinct fleep-tweep sound of Hellschreiber calling CQ. Quickly, I loaded the software and "caught Nick KCØBGA, before he got away."

Turned out, he was doing the final

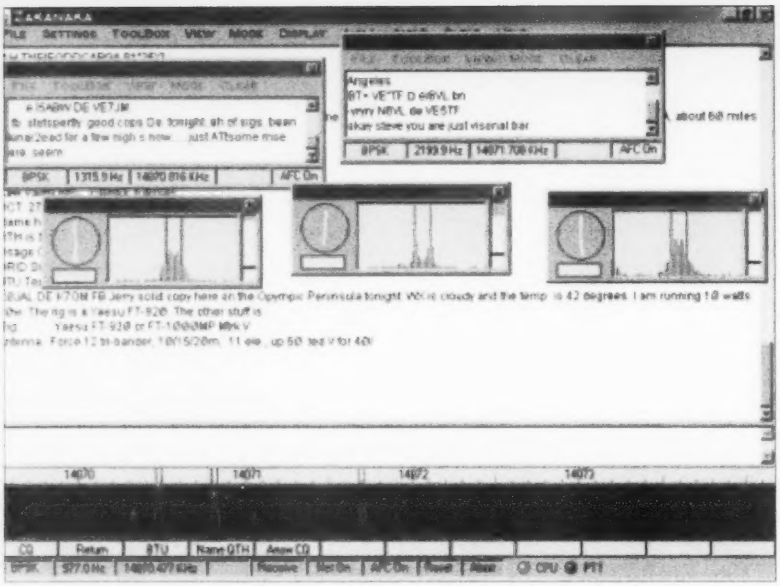

Fig. 2. Screenshot 2 — Zakanaka will very handily monitor three PSK31 signals at a time. In this example, you see the main large pane in the background with print being added below the auxiliary panes. The five smaller panes can be positioned anywhere you wish in regular Windows fashion. When you examine the actual display closely, you will see that the tuning windows are color-coded so you can tell which signal is in which pane. I found tuning the auxiliary signals was easily done by clicking within the tuning window. It went quickly and the software seemed to jump at the signal when it got close and tune perfectly. It would be possible to arrange this panel the same as the RTTY example so you could observe the Logger entry pane. You would need to use just the main receiving pane to avoid clutter. It is not necessary to have all this busy-ness. It is your choice to configure the way that works best for you. PSK31-transmitted signals are very sensitive to audio drive. Zakanaka's Help file covers this and the software makes it easy to perform the adjustments. Follow the instructions and you will not have complaints about a "wide splattering signal." The reports received were all very complimentary about the clean signal. You can choose the number of macros you wish to display. Plus, the RTTY module has its own set of macros so you can make them mode sensitive. And this is FREE software!

tweaking on the low power version of the Elecraft radio kit he had just assembled. It was doing a bang-up job, especially for 5 watts, and we were not employing anything other than the default Hell mode. I tried a little trick I had seen on the Hellschreiber reflector for curing light print. I clicked the AGC button and instantly, the print darkened on the monitor.

All went well, and the discussion turned to MT63. It had been a while since I had worked that mode, but the software is on the hard drive, so we went to 14.113 and Nick gave a call before I was finished poking the buttons. He had a terrific MT63 print on the monitor, again with the 5 watts.

Every time I work someone with a digital mode and they are running QRP, I am still filled with wonderment at the success of these modes. I did start to experience a problem and thought perhaps it was an imperfection in the software or a failing path. Then I realized the missed print was simply where my computer is just a bit too slow for the software to function.

After ending the otherwise successful QSO, I checked and sure enough, the author's (Nino IZ8BLY) recommendation for success is to use a CPU running at least 166 MHz. My 120 CPU did okay, considering, I guess. Something is happening with a lot of the Visual Basic written programs these days. We will have to all get faster computers or settle for not using certain software and/or modes we cannot enjoy.

However, as Nick and I communicated via E-mail afterward, and I pointed him to URLs where he could download MMSSTV and SSTV-PAL, something else struck me that may interest a lot of you.

Nick was expressing concern that, even though he was receiving great images with the MMSSTV, he was hesitant to expect much out of his little peanut whistle when it came to transmitting in that mode. I recalled a conversation with an ardent SSTVer who claimed excellent results with just a few watts using that mode. Of course the path has to be good, but time will tell. I won't be the least bit surprised to see a surge in QRP SSTV sometime soon, especially as I observe so many hams having success with QRP PSK31 and MFSK16.

Another intriguing program is coming along that will surely be available by the time this issue hits your porch. The new version 2 of MixW is well enough along that I happened onto Jim WA2VOS on MFSK16 one afternoon. Jim, as you may be aware, is deeply smitten with the MixW bug and it would appear to me this will possibly be an answer to some of the ills I am experiencing with some software packages on this slow computer.

Just as an aside, I would like to remind you that I use this computer as a sounding board (wouldn't refer to it as a benchmark) to separate the programs that are too "fat" and won't run correctly on these "resources-challenged machines" from those that are written to work flawlessly under limiting parameters. This is not to condemn the work that has been donated so gratuitously by so many dedicated hams.

It is all good programming that promotes the betterment of digital hamming. However, I find hams complaining that some of this really great software just won't run on their 66 MHz CPU. There are digital programs, of a limited variety, that will perform well on those older machines. So the fun can be experienced by everyone.

MixW (Vers. 1.45) is one of the few programs I have that is written with good tight programming in C++ that seems to perform flawlessly at every turn. And that is highly commendable. Nick UT2UZ, the author, does a remarkable job in the art of programming.

And there are many other contributors to whom we all owe thanks for helping us to enjoy the digital modes. No one has made a "bad" contribution to the effort.

I made an agreement (compromised my principles?) with my wife . The story is that we got her a new computer last Christmas. It was a bargain basement buy. The advantage is the competition is eliminated for this "main" computer There is more to the story. At the time of purchase a commandment came down from on-high that "there are to be no ham radio programs on this computer."

If we look at today's major story, I have broken the rules. But it is all in the interests of promoting the science of ham radio. The masses will benefit from these subversive activities.

Source for:	Web address (URL):
Mix W Soundcard program for PSK31, RTTY, new modes, MTTY, FSK31, more	http://tav.kiev.ua/~nick/my_ham_soft.htm http://users.nais.com/~jaffejim/mixwpage.htm
FREE MMHam site — MMTTY — MMSSTV	www.geocities.com/mmhamsoft/
FREE VK7AAB — SSTV-PAL — PSK-PAL	http://users.origin.net.au/~crac/
Much ham info w/SSTV downloads	www.conknet.com/~kb1hj/index.htm
TrueTTY — Sound card RTTY w/ PSK31	www.dxsoft.com/mitrtty.htm
Pasokon SSTV programs & hardware	www.ultranet.com/~sstv/lite.html
PSK31 — Free — and much PSK info	http://aintel.bi.ehu.es/psk31.html
Interface for digital - rigs to computers	www.westmountainradio.com/RIGblaster.htm
Soundcard interface info — includes Alinco	www.packetradio.com/psk31.htm
Interface info for DIY digital hams	www.qsl.net/wm2u/interface.html
WinWarbler info and free download	www.qsl.net/winwarbler/
MFSK-related tech info — how it works	www.qsl.net/zl1bpu/
Throb — New — lots of info	www.lsear.freeserve.co.uk/ www.btinternet.com/~g3vfp/
Download Logger, also Zakanaka	http://www.qsl.net/kc4elo/
PSKGNR — Front end for PSK31	www.al-williams.com/wd5gnr/pskgnr.htm
Digipan — PSK31 — easy to use	http://members.home.com/hteller/digipan/
TAPR — Lots of info	www.tapr.org
TNC to radio wiring help	http://freeweb.pdq.net/medcalf/ztx/
ChromaPIX and ChromaSound DSP software	www.siliconpixels.com
Creative Services S/W Multimode w/PSK	http://www.cssincorp.com/products.htm
Timewave DSP & AEA (prev.) products	www.timewave.com
Auto tuner and other kits	www.ldgelectronics.com
XPWare — TNC software with sample DL	www.goodnet.com/~gjohnson/
RCKRtty Windows program with free DL	http://www.rckrtty.de/
HF serial modem plans & RTTY & Pactor	http://home.att.net/~k7szl/
SV2AGW free Win95 programs	www.raag.org/index1.htm
Source for BayPac BP-2M & APRS	www.tigertronics.com/
Int'l Visual Communications Assn. — nonprofit org. dedicated to SSTV	www.mindspring.com/~sstv/
Hellschreiber & MT63 & MFSK16 (Stream)	http://iz8bly.sysonline.it
HamScope — multimode w/ MFSK16	http://users.mesatop.com/~ghansen/
YPLog shareware log — rig control — free demo	www.nucleus.com/~field/

Table 1. *The Chart.*

So this is what happened

I kept looking at this new piece of equipment that was sitting mostly idle on the next desk here in the shack and it finally broke down my resistance. First, it was necessary to extend the cable connections from the rig to the soundcard. That was simple to fix with a trip to Radio Shack. Two audio cable extensions for transmit and receive and the tests could begin.

I loaded in one of the culprit programs and, to my utter dismay, it worked very little better in the new whiz-bang computer than it did in this old one. Something was proven, or maybe disproven, and I am enough out of the loop that it really wasn't making nor breaking my day ... yet.

Fortunately, there are plenty of other programs to be tried. So, I went with one of my favorites that works like a million in this computer and it had severe problems copying in the new computer. It did, however, transmit what appeared to be normally. I was gaining, but still unsure of where this was leading.

Program of the day

The next software package I wanted to try was the Zakanaka. I had managed minimal success with that program in one of its earlier forms in the slow machine. The program is meant to run hand-in-hand with Logger, but if I tried that with the 120 MHz CPU it spelled c-r-a-s-h. I really wanted to see this combo work, especially since the MMTTY engine had been incorporated into the Zakanaka.

I installed the latest version and, Bingo! it copied PSK like a champ. Plus, I might add, RTTY print is as near perfect as can be. I wrote a few macros and settled into the task of making a contact with manual Xmit/Recv toggling by leaping from one desk to the other. It worked well. The reports were good, which meant I had successfully adjusted the audio drive.

Next chore — Two more cables and these had to be extended with plugs and soldering iron mode. It took a while, and there were a few complications due to the layout of the jacks on the fancy new computer, but I came up with the essential PTT. No more leaping up and down. I was thinking ahead to quick RTTY exchanges and I might have tripped and strangled myself on some of the cable during one of those fast toggles.

There is one large detail I was overlooking up to this point. The help file for Zakanaka is exquisite. I don't think I noticed a single spelling or grammar error, and it is written by hams who were interested in making the user a success so it is in do-it-this-way format.

Why is this a large detail? I decided it was simply too bulky to read through on the monitor, so I downloaded it and printed. I want you to know this is quality stuff. I chose the Adobe Acrobat version and it is filled with visual aids and references to cover about every contingency. And it is 240 pages!

That sounds a little intimidating, but it was worth my while. I have not read it word for word, but I believe everything you could want to know about the use of this program, how to hook up to your rig, what buttons to click and the necessary settings to make it work are all in there.

As I was penciling in page numbers, I ran across the items I needed most and went back and finished the setup. When I was through, I had a logging program installed that read the frequency of the radio and a communications program that automatically "knows" the frequency the program is transmitting and receiving on and displays it.

Continued on page 55

HAMSATS

Amateur Radio Via Satellites

Andy MacAllister W5ACM
14714 Knights Way Drive
Houston TX 77083-5640

Summer and Field Day!

It's that time of year again: Each year, the American Radio Relay League (ARRL) sponsors an emergency preparedness exercise called Field Day. The event takes place during a 24-hour period on the fourth weekend of June.

Individual hams and ham clubs compete to make as many contacts as they can from remote locations using emergency power and portable stations. For 2001 the event starts at 1800 UTC on June 23rd and continues till 1800 UTC on the 24th. The Radio Amateur Satellite Corporation (AMSAT) promotes its own version of Field Day for operation via the hamsats, held concurrently with the ARRL event.

AMSAT Field Day 2001

While the ARRL [http://www.arrl.org] rules provide a 100-point bonus for the successful completion of a single amateur-radio satellite contact, the AMSAT rules promote activity on all of the current operational satellites. The AMSAT [http://www.amsat.org] rules worked reasonably well last year, but show some important changes for 2001 regarding the use of the single-channel FM satellites like UoSAT-OSCAR-14 (UO-14) and AMRAD-OSCAR-27 (AO-27).

The congestion on UO-14 and AO-27 was so intense in 2000 that some stations running over 100 watts on the two-meter uplink to high-gain yagi antennas couldn't make a single contact. A few very-well-equipped stations dominated the field and made it virtually impossible for those with small antennas and reasonable power levels to get through. The newly modified AMSAT rules (presented here) now only allow ONE contact per each FM, single-channel satellite. Although it is doubtful that those stations with dual-band HTs using simple whip antennas will get through even with the new rule, it is hoped that more folks will at least get a chance to make a contact. Stations that have completed their single contact via a particular FM satellite, are encouraged not to make any further contacts via that satellite during the Field Day period.

The first-place emergency power/portable station will receive a plaque at the AMSAT General Meeting and Space Symposium in Atlanta, Georgia, October 5–6, 2001. Certificates will be awarded for second and third place portable/emergency operation in addition to a certificate for the first-place home station running on emergency power. Stations submitting high, award-winning scores will be requested to send in dupe sheets for analog contacts and message listings for digital downloads. Check the AMSAT Web page for details and a sample entry form.

There are some good reasons to consider participating in the AMSAT event if you are serious about chasing satellites on Field Day. The AMSAT rules recognize the individual hamsats as separate bands, thus promoting the pursuit of all of the "birds" for the duration of the event. AMSAT also recognizes digital satellite activity. Special Field Day messages are sent to the "digisats" for download points by anyone who can receive them. It's even possible to participate in the AMSAT event and get points without a license. While monitoring the downlink from the digisats, complete short Field Day greetings messages can be received without ever transmitting.

Making choices

It would be nice to try to work every active hamsat in the sky on Field Day, but it's just not possible without a lot of gear and a lot of club members or active participants in the satellite chase. The best thing to do is to pick satellites that have transponders, either analog (voice and CW) or digital (1200 or 9600 baud), for which you have equipment.

If you are considering ONLY the FM voice satellites like UoSat-OSCAR-14 or AMRAD-OSCAR-27, don't, unless you are simply hoping to make one contact for the ARRL rules bonus points. Even with the rule changes for 2001, the FM voice satellites turn into a solid FM-repeater pileup during Field Day. It's fun listening, but that's not what Field Day is all about. Diversify. Gear up for other voice/CW hamsats.

If you have worked the satellites on Field Day in recent years, you may have noticed that a lot of good contacts can be made on some of the less-populated, low-earth-orbit satellites like Fuji-OSCAR-20, Fuji-OSCAR-29 and RS-12/13. During a typical workweek, contacts are few and far between, but during Field Day the transponders come alive like 20 meters on a weekend. The good news is that the transponders on these satellites will support multiple simultaneous contacts. The bad news is that you can't use FM, just low duty-cycle modes like SSB and CW. AMSAT-OSCAR-10 can also be a lot of fun on Field Day if the solar panels are properly illuminated and it is in a good position in the sky for Field Day. Plot some orbits and check it out.

Equipment

The best radios for Field Day are the ones you use at home, unless of course, they are heavy antiques. If you have one of the newer, all-mode HF/VHF/UHF transceivers, take it with you. If you don't have one, find someone who does, and borrow it. Be sure that it can transmit on one satellite uplink band while receiving another. Practice prior to the event. There's nothing worse than trying to figure out a strange radio while you are hunting for a satellite, keeping tabs on uplink and downlink frequencies, and adjusting for Doppler, all at the

same time. If at all possible, have a back-up station. During one Field Day event, our group had to dig out the back-up to the back-up due to power problems.

Be prepared to at least work SSB and CW on Mode J (two meters up and 70 cm down) via the Fujis. It is doubtful that AMSAT-OSCAR-40 will be available for use, but with a nice set of two-meter and 70-cm directional antennas, AO-10 Mode B (70 cm up and two meters down) can be a lot of fun on a good day.

Unless you have experience with low-power satellite work, don't try satellite "QRP" on Field Day. It's really hard even for the best satellite operators, and can be quite difficult and disappointing to demonstrate to potential newcomers. There are too many inexperienced satellite operators on the air during Field Day, and many are trying to deal with noisy generators, bugs, and unfamiliar radios. Listening for weak stations is too much to ask.

Antennas

A simple system for RS-12 or RS-15 Mode A can get by with a dipole in the trees for 10 meter reception and a ground plane in the clear on the two-meter uplink. Most serious satellite operators will have an antenna system that will rival many home stations with large circularly-polarized yagis positioned by azimuth and elevation rotors. Something in between these extremes should suffice.

Predictions

Don't assume that you can take a laptop computer to Field Day and do your predictions after you get there. Plot all of your potential satellite passes in advance for every satellite you intend to pursue. Check the results. Look for timing conflicts. Make sure that the coordinates of the Field Day site and recent satellite element sets have been entered into the software. Don't forget to take along some satellite frequency guides unless you are one of the few who has memorized all the uplink and downlink bands for all of the hamsats in orbit.

Power and interference

There is nothing worse than having all the gear, antennas, predictions, and accessories ready to go, and then discovering that you can't hear anything but noise on the downlink frequencies. It happens a lot. Noisy power sources are the number-one culprit. If you can operate with batteries, do it. Satellite chasing is considered weak-signal work. Most of our hamsats only have a few watts output to simple antennas. They can be hard to hear. A typical consumer-grade gasoline generator can produce a lot of noise in the RF spectrum. Be sure to test your generator prior to Field Day. Check it with your satellite rig for a few passes. If it is noisy, either cure the problem or get another power source.

Don't forget about "the other guy." Most Field Day operations include multiple stations for HF, VHF, and satellite work. The folks in the tent next door on 10 meters can ruin your best attempts to make Mode-A contacts. Coordinate with them so that they can go to another band or take a break during those short intervals when the RS hamsats come by.

If your group operation has any terrestrial VHF stations or two-meter packet systems, they can destroy any chances you might have had hearing AO-10 on Mode B with its two meters downlink. As with the HF folks, make your intentions known and arrange for an operating schedule, in advance. Even with all these precautions, it is always a good idea to isolate the satellite station from the others. A high-power 20-meter SSB rig will almost always mess with a 10-meter receiver just a few feet away.

Have fun!

You may have multiple rig difficulties, antenna failures, computer glitches, generator disasters, tropical storms, and even satellite problems, but the goal is to test your ability to operate in an emergency situation. Try different gear. Demonstrate satellite operations to hams that don't even know that the hamsats exist. Test your equipment. And finally, have fun doing it!

The ARRL Field Day hamsat rules

The following item is from the American Radio Relay League Field Day rules at the ARRL Web site.

7.3.7. Satellite QSO: 100 bonus points for successfully completing at least one QSO via an amateur radio satellite during the Field Day period. Under the "General Rules for All ARRL Contests" (rule 3.7.2.), the no-repeater QSO stipulation is waived for satellite QSOs. Groups are allowed one dedicated satellite transmitter station without increasing their entry category. Satellite QSOs also count for regular QSO credit. Show them listed separately on the summary sheet as a separate "band."

The AMSAT Field Day rules

The AMSAT Field Day 2001 event is open to all amateur radio operators. U.S. and Canadian amateurs are to exchange ARRL section and Field Day transmitter class. Foreign amateurs should exchange country name and signal reports. The AMSAT competition is to encourage the use of all amateur satellites, both analog and digital. Note that no points will be credited for any contacts beyond the one allowed via each single-channel FM satellite. Operators are encouraged not to make any extra contacts via these satellites (ex.: UO-14 & AO-27). CW contacts and digital contacts are worth three points as outlined below.

1. Analog Transponders

• Each satellite transponder is considered a separate band.

• All phone QSOs and all CW QSOs on a given satellite transponder are considered separate bands.

• All packet/RTTY/ASCII/AMTOR QSOs through analog transponders are counted as CW QSOs.

• Phone QSOs count for one point and CW QSOs count for three points.

• Cross-mode (CW/phone) contacts are not allowed.

• Only one contact is allowed via each single-channel FM satellite.

• The use of more than one transmitter at the same time on a single satellite transponder is prohibited.

2. Digital Transponders

For the Pacsats (LO-19, KO-25, etc.), each satellite is considered a separate band. Do not post "CQ" messages. Simply upload ONE greeting message to each satellite and download as many greeting messages as possible from each satellite. The subject of the uploaded file should be posted as Field Day greetings, addressed to ALL. The purpose of this portion of the competition is to demonstrate digital satellite communications to other Field Day participants and observers.

The following uploads and downloads count as three-point digital contacts.

(a) Upload of a satellite Field Day greetings file (one per satellite).

(b) Download of satellite Field Day greetings files posted by other stations. Downloads of non–Field Day files or messages not addressed to ALL are not to be counted for the event. Save DIR listings and message files for later "proof of contact."

Sample satellite Field Day greetings file

"Greetings from N5EM Field Day Satellite station near Katy, Texas, with 20 participants, operating class 2A, in the

Continued on page 56

On the Go

Mobile, Portable and Emergency Operation

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Attention, Newcomers!

I've noticed lots of new hams on the air lately, and I'd like to extend a huge welcome to each and every one of you. Not only is it great to be able to chat with you on the local repeater or the low bands, but I'm looking forward to your help during the next emergency. If you're new to the hobby, there are a few suggestions I have that might prove useful. Maybe you already know about these tips, but I figured I'd bring them up just in case. Besides, it's kind of hard to remember everything when a disaster hits and you're headed out the door to help out.

The most convenient and popular type of radio is the handie-talkie or HT. It is also the least effective in many ways. A handie-talkie is convenient because it has a self-contained power supply, but that also means that it has a limited power supply. It has a convenient belt clip and a flexible "rubber ducky" antenna. It seems to be the ideal tool for responding to a disaster or emergency, and is helpful if you know some of the tips to making it work.

First, let's talk about the power supply. Most HTs come supplied with a single battery pack. Often the battery that is included is modest both in terms of transmitter output and duration of operation. Most manufacturers, as well as independent battery companies, offer battery packs that offer an extended life as well as packs that provide the maximum output. It's usually a trade-off so that you can have one feature or the other. If I have to choose, I usually prefer to get the battery that provides the high output and purchase a second battery pack. Although it's a little more expensive, I then purchase two battery packs to provide the endurance. What's the difference between the two? The battery that provides higher output normally operates at a higher voltage. The longer-lasting battery has a comparable number of cells, but wired in parallel so you have a lower voltage with a larger current capacity.

In many cases, there are alternatives to the standard battery pack, and for extended operations you may elect to use a different power supply. An HT can be operated from an automobile battery using the cigarette lighter adapter. Of course, the benefit of an HT is that you can carry it to a location where your car cannot go. For these situations, there are commercial power systems available that include a gel cell, charger, and connectors in a single package. Many utilize a cigar lighter type of outlet, so the same adapter used to power a radio in a car can be used with this type of power supply. Of course, it is possible to build a power supply that accomplishes the same thing using either a gel cell or dry cells. A plastic box such as the type used for saving leftover food can be fitted with battery holders for C or D cells and a connector, for only a very small investment. This type of home-brew power source is ideal for operating from a fixed site, such as a disaster services shelter. You can use it while portable by using a backpack or a small bag with a shoulder strap.

The handie-talkie's convenient rubber ducky is fine for operating in an area that has great repeater coverage. During a disaster or emergency you will probably have to operate simplex or at the fringes of a repeater, and may find its performance just shy of disappointing. The rubber ducky is physically shortened to be more convenient for day-to-day use. Like any antenna system it needs to work against a counterpoise — in a dipole antenna one leg of the antenna operates against the other, while a vertical operates in conjunction with its radials. The rubber ducky is a vertical antenna, and marginally operates with the radio case as the counterpoise. When you're holding the radio you are sort of kind of loosely capacitively coupled to it, so you act as a very inefficient counterpoise.

There are a couple of things you can do to improve the operation of your HT. First, when operating, take the HT off your belt. If your body can couple to the body of the radio when holding it in your hand, it can act similarly when the antenna is parallel to your torso with the radio clipped to your belt. Second, if possible, use a better antenna when operating in a remote area or on simplex. A 1/4-wave antenna will provide some improvement, and you can choose between either a flexible or a telescoping version. I prefer a 5/8-wave telescoping antenna even though it is a bit longer. In either case, a "real" antenna will operate much better than the rubber duck. If you operate from a fixed location, a J-pole antenna made from 300-ohm television twinlead is a big help, or you can use a magnetic mount mobile antenna on top of a filing cabinet or other metal surface. Incidentally, in most cases your 2-meter antenna will resonate adequately if you operate 440 MHz on a dual-band rig.

One other trick you can use to improve your transmission is to add a more effective counterpoise to your antenna. Units available commercially include the popular "Tiger Tail." Again, you can build something similar yourself by attaching a piece of wire to the outer portion of your HT's antenna connection. The wire should be somewhere about 19-1/4" long and can be attached by using a large solderless lug. If your antenna has a BNC connector, choose a lug size that can fit over the BNC barrel. You may have to file notches in the lug to permit it to pass over the two "ears" on the connector. Reinstall the antenna over the lug, let the wire tail drop naturally, and you should notice a difference.

In a disaster we need all the help we can get, and those of you new to the hobby are

Continued on page 57

HOMING IN

Radio Direction Finding

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RDF Secret Weapon Revealed

One of the most appealing aspects of ham radio is that it's a worldwide hobby. I have been fortunate to visit many countries and have met friendly hams every time. Many of them are fans of radio direction finding (RDF), either mobile (T-hunting) or on foot (foxtailing, radio-orienteering, and ARDF).

In most countries, geography and the high cost of fuel make foxhunting on foot more popular. Such hunts are also perfect for introducing young people to our hobby. About 30 countries are active enough to be represented on ARDF Working Groups of the International Amateur Radio Union (IARU). Others are just discovering the fun. For instance, in recent weeks I have received inquiries about starting ARDF activities from hams in Spain, El Salvador, and Singapore.

As ARDF Coordinator for IARU Region 2 (North and South America), I am particularly eager to make new contacts in Central and South America. USA and Canada have growing ARDF programs, and it's time for the activity to spread southward. When you're on the DX bands, talk about your ARDF activities and encourage those whom you QSO to give it a try. Refer them to the "Homing In" Web site for more information.

If your summer travels this year will take you to Europe or Asia, check out the radio-orienteering action while you're there. Several countries, such as Belgium and Germany, have regular ARDF events where visitors are welcome. Championship opportunities overseas this year include the 13th IARU Region 1 ARDF Championships (September 12–16) in France, the 3rd IARU Region 3 ARDF Championships (August 23–28) in Mongolia, and the "5 Days ARDF 2001" event (July 3–8) in the Czech Republic. The "Homing In" Web site has links and contacts.

To get to the best foxtailing challenge of summer 2001 for American hams, you won't have to travel nearly as far. The First USA ARDF Championships get under way July 31st in Albuquerque, New Mexico, with hams from all over the USA and the world expected to vie for the medals. The two-meter hunt will be on August 2nd and the 80-meter event on August 3rd. Both will be in beautiful forested country near this intriguing desert city.

Based on my recent meeting with leaders of the Albuquerque Amateur Radio Club, I know that they will be putting on a first-class event. If you haven't already registered, go to my Web site and link to the USA Championships site for all the details and a registration form, or send postal mail to me. Remember that the event is for beginners and experts alike. Training sessions take place on the first day, taught by the most experienced hunters available. You'll also have opportunities to learn about many types of RDF gear for the 2-meter and 80-meter bands (**Photo A**). See you there!

Hunt your way to the pub

If your foreign travels take you to Canada, Australia, Japan, or Italy, check out the mobile T-hunting action there. Most T-hunters in these lands build all of their RDF gear, much of which is quite sophisticated.

"Homing In" for April 2001 introduced Dave Bullock G6UWO. He told about the challenging series of hunts put on every summer by the Amateur Radio Club of Nottingham (ARCON), about 100 miles north of London. Dave and his foxhunting

Photo A. *Besides challenging competition, international ARDF events are a great place to learn how to improve your RDF equipment. Rik Strobbe ON7YD (left) is discussing two-meter fox transmitter and turnstile antennas with attendees at the 1999 IARU Region 2 Championships in Portland, Oregon.*

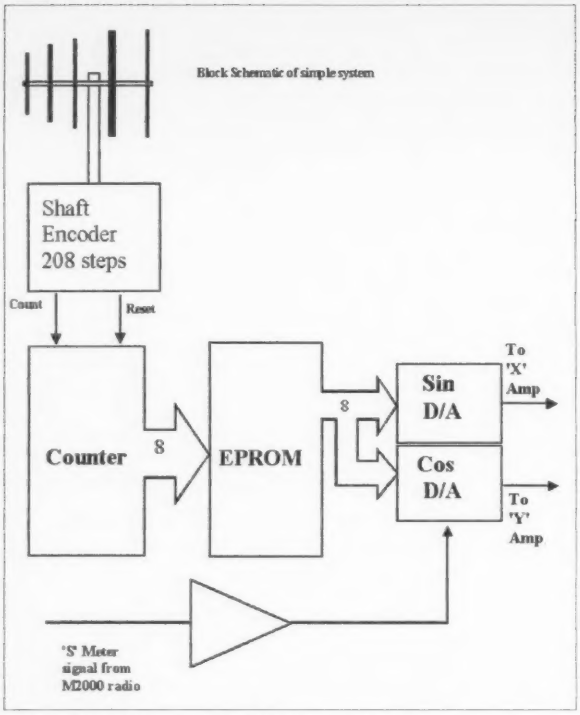

Fig. 1. Block diagram G6UWO's first Whirligig system.

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partner John Wood GØPSI have another concern right now — the recent outbreak of foot-and-mouth disease that has made many rural areas off-limits to prevent the spread of this virus. "I sense that there is a bit of panic beginning to set in amongst the farming community," he wrote. "People living outside the affected areas are endorsing the latest government idea to kill all stock within a two mile radius of every outbreak. Of course, those in the proposed zones with prize herds are not convinced!

"It could be that we will be restricted to transmitter hunting in built-up areas only," Dave continued. "Yuck, I hate hunting in town! It is so dangerous with all the traffic jams and hunters racing to get there first. Personally, we enjoy the drive in the countryside as much as the competition — especially the post-hunt gathering at a quiet village pub."

Hams in Nottingham take their monthly two-meter mobile T-hunts very seriously, keeping careful track of the results of each hunt and awarding a trophy each year to the most successful team. Dave and John won it again in 2000 (that was their fifth consecutive year) and credited their RDF "secret weapon."

I decided to find out how secret it is. Dave is justifiably proud and was eager to tell how it came about and how it works. Maybe that's because he's 5,300 miles away, so I'm not likely to use the information to compete against him!

Dave told me that ARCON members use a wide variety of equipment, from doppler sets to the simple HB9CV phased beam and a handie-talkie. "We had already been instrumental in introducing the first doppler system into the club's hunts, based on the 1981 design in *73 Magazine* by Dave Cunningham W7BEP," he wrote. "Whilst it worked well sometimes, we conducted tests and found that the multipath environment was the ideal place to hide to confuse a doppler system. It would just lock on to the strongest signal, whether direct or reflected! This was hopeless, as at that time industrial estates and heavily built-up areas were favored by the fox.

"What we needed was a system that would be able to differentiate between all these direct and reflected signals," he continued. "John had been reading about wartime submarine hunters and was impressed by their simple rotating loop and cathode-ray tube (CRT) display systems. These quickly locked onto the submarine as it popped up to make its clandestine transmission. The direction and signal strength were displayed as a vector display on the CRT. This seemed like a good idea as, unlike the doppler, the display would show all of the signals arriving at the vehicle, which is exactly what we wanted!

"From our experiences with the doppler, we knew that 1/4-wavelength whips were not sensitive enough for this application. There were a few times when we couldn't hear the fox from the start. It's very frustrating having to drive from high spot to high spot, hoping for a signal! By the same reckoning, loops were out, too. What we needed was lots of gain and directivity — a beam!

"The system should rotate the beam antenna on the top of the car, connected to the two-meter RDF radio. The output of the S-meter circuit from that radio should be displayed on a readout device. A circular timebase should be synchronized to the rotation of the antenna such that the signal strength information is swept around the screen. A compass ring around the diameter of the CRT should show the bearing in degrees. Finally, there should be a foolproof way of transferring that bearing to the map."

Continued on page 50

Advertisers' Index

R.S.#		page
•	AEA	15
•	Alinco	CV2
•	All Electronics Corp.	11
•	Alltronics	53
•	Am-Com, Inc.	26
16	Astron Corporation	2
42	Bilal Company	37
168	Buckmaster Publishing	15
56	Buckmaster Publishing	38
99	Communication Concepts	23
•	Communications Electronics, Inc.	5
10	Communications Specialists, Inc.	27
•	Creative Services Software, Inc.	26
•	D & L Antenna Supply Co.	23
13	Doppler Systems	48
•	E-Z Hang	23
•	Fair Radio Sales	31
193	GGTE	57
•	Ham Ambassadors	53
•	Ham Mall	27
•	Hamtronics, Inc.	9
42	Isotron	37
•	Kenwood Communications	CV4
•	Maha Communications, Inc.	7
•	Michigan Radio	49
160	Micro Computer Concepts	37
193	Morse Tutor Gold	57
•	Omega Sales	12
•	Omega Sales	19
•	Omega Sales	25
•	Omega Sales	40
•	Peet Bros.	25
•	Rad-Comm Radio	57
•	Radio Book Shop	12
•	Radio Book Shop	25
•	Radio Book Shop	26
•	Radio Book Shop	27
•	Radio Book Shop	31
•	Radio Book Shop	40
•	Radio Book Shop	51
•	Radio Book Shop	57
•	Radio Book Shop	63
34	Ramsey Electronics	3
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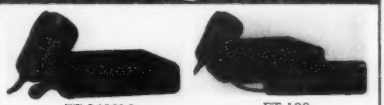
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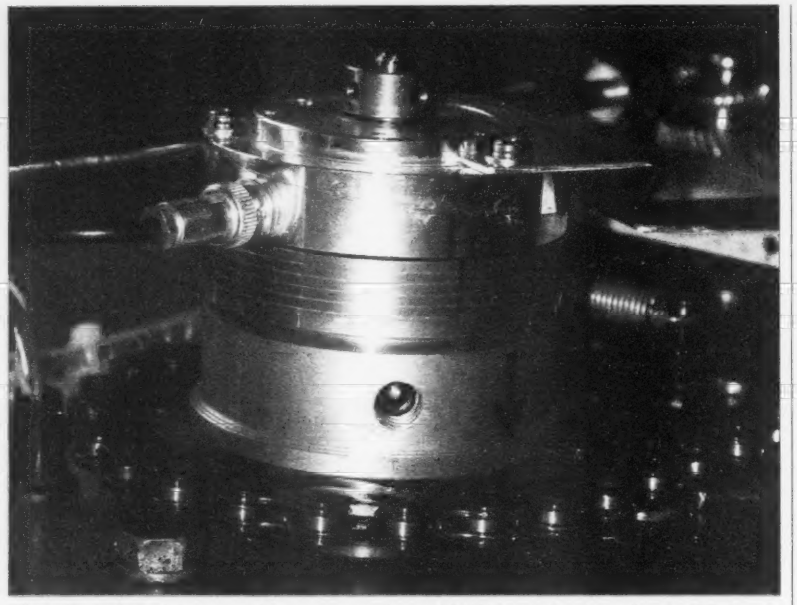

***Photo B.** A chain drive turns the antenna and an old VCR headwheel couples the RF signal.*

Electronic trigonometry

At this point, long-time "Homing In" readers should have a strong feeling of déjà vu. In places such as southern California, the buildings and mountains reflect VHF/UHF signals and hidden transmitters are frequently shielded by terrain. The signal at the start point is often weak, indirect, and horizontally polarized. That means that dopplers are unsuitable much of the time. Many T-hunters have recognized the advantages of coupling the output of a rotating high-gain antenna to a circular-trace (polar) readout.

About forty years ago, the late Jim Davis W6DTR made a polar RDF display, driven by a hand-turned two-element phased array for two meters or a loop for 75 meters. Jim became unbeatable because his equipment was far more advanced than any of the other T-hunters had. I described his display, which used a surplus CRT with long persistence (P7) phosphor, in my book.[1]

You may remember from a math class that polar coordinates are represented by an angle (signified by the Greek letter theta) and the radius (r). In a polar display, magnitude of r is proportional to signal strength. An ordinary oscilloscope has x (horizontal) and y (vertical) deflection plates or coils. To display polar magnitudes, they must be converted to x and y axis voltages. The value of x equals r times the cosine of theta. The value of y equals r times the sine of theta.

We need a device that outputs voltages proportional to the sine and cosine of the beam's pointing angle. W6DTR used a sine-cosine potentiometer. It has special windings that generate voltages proportional to the sine and cosine of the shaft angle when driven by a reference voltage. My book also outlined how the sine and cosine signals can be generated electronically by storing the x and y voltage values for each theta in a lookup table in a programmable read-only memory IC (PROM). Digital-to-analog (D/A) converters turn these PROM-stored values to sinusoidal analog voltages used to drive the CRT. Receiver S-meter voltage (r) is applied to the reference voltage input of the D/A converter.

Since then, creative stateside hams have built polar readouts optimized for their own hunting circumstances. "Homing In" has featured five of them. The first was JaMi Smith KK6CU of Pasadena, California, who rotated a 3-band 6-element cubical quad at 40 RPM with a motor and displayed the signal traces on a Tektronix medical storage oscilloscope monitor. Motor and monitor were powered by a 400-watt squarewave DC-to-AC inverter. He made an in-line rotary coupler (slip rings) out of a two-element continuous-turning potentiometer to pass RF from the spinning quad to his receiver.[2, 3]

Next came Jerry Boyd WB8WFK, who mounted a continuous-turning linear taper potentiometer to his antenna mast.[4, 5] The azimuth reading and S-meter voltage went to an interface box for digitizing. A laptop computer crunched the data and displayed a plot of amplitude versus direction on the computer screen.

Two Santa Barbara–area hams, Kerry Provancha KK6OS and Tom King KA6SOX, made a long-persistence polar display out of an old marine radar set and named it RADAD.[6] Their unique yagi had a fixed half-wavelength vertical driven element with parasitic elements rotating around it, eliminating the need for slip rings. Bill Rupp NØMKJ of Milwaukee is proud of his motorized quad system, which he calls the Foxcopter.[7] It uses a mercury-filled rotating electrical coupler from McMaster-Carr[8] to provide slip rings for the RF signal.

My own system, the NorthScope[9, 10], substitutes the sine and cosine outputs of a mast-mounted fluxgate compass in place of the sin-cos pot. The resulting polar display is always relative to true north, which aids navigation on winding hilly roads. The high-persistence CRT readout, made from a vintage Heath SB-620 Scanalyzer, draws less than one ampere from the car battery.[11]

Like W6DTR and WB8WFK, I prefer a manually-turned antenna instead of motorized, because I like to swing the quad back and forth by hand to find the precise direction of the strongest peak of a fluttering signal on

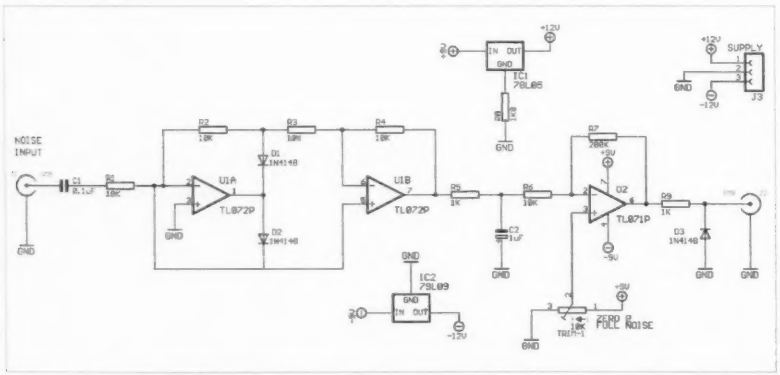

Fig. 2. Schematic of the noise detector. It is drawn in the European convention, which uses rectangular boxes for resistors.

the display. Slip rings are not needed in a hand-turned system.

First whirligig in Nottingham

G6UWO and GØPSI read about W6DTR's system and electronic generation of sine-cosine signals in my book, but they didn't see any of the "Homing In" articles. The system that they developed independently has similarities to them all, but it also has some clever enhancements, as you will see. **Fig. 1** is the block diagram of their "Mark I" version. The optical encoder from an old hard disk drive provides mast pointing signals to clock an 8-bit converter that counts up through the memory locations of the PROM. Digital sine and cosine values from the PROM go to D/A converters, driving the x and y coils of a medium-persistence CRT display.

Dave and John's rotating antenna, pictured in "Homing In" two months ago, is a five-element "J-beam" mounted for vertical polarization. They are still improving that part of the system. Dave's latest E-mail states, "Preliminary tests with trigonal reflectors last year showed better front-to-back ratio and reductions in the interfering signals off the side of the antenna when moving. We tested all sorts of reflector arrangements, altering the number of elements, the spacing, and the angle of the reflector mini-booms to the main antenna. Our polar display lends itself beautifully to plotting the antenna patterns. We are commencing pre-season testing, hoping to solve the problem of the slight loss in forward gain caused by extra elements."

John's assignment was to design the rotating mechanism. "We wanted a very sturdy system that could rotate the beam whilst driving at up to 70 miles per hour," Dave declared. "Out of John's bottomless junk box came an automobile windscreen wiper motor, a couple of bicycle chain wheels and a length of chain. He made the main antenna bearing from an Austin Mini front wheel hub and bolted the whole assembly to a couple of surplus ladder racks. The 12-volt motor and chain wheels provide a 1:1 drive and spin the antenna at 60 RPM. The stub mast is hollow, allowing the antenna coax to pass down its center to our rotating joint.

"Having scoured the Internet for "noise free" rotating coaxial joints and only finding some that were very expensive, we decided to develop our own," Dave went on. "We found that the head assembly from a VHS video recorder contains a rotating RF transformer to transfer signals from the "flying" heads to the chassis. We replaced the coils in a VCR transformer with single turn loops and, with a bit of care, produced a rotating joint with just 3 dB insertion loss and less than 0.5 dB eccentricity." (See **Photo B.**)

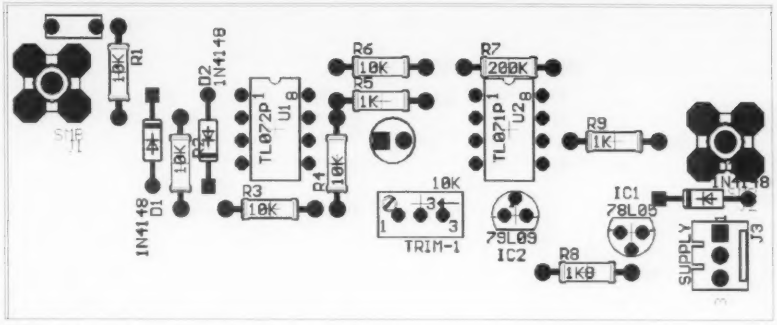

Fig. 3. Noise detector component layout.

"We carried out tests on our two-meter radios and found that they were very lacking in the S-meter department. My Yaesu FT-290 had less than 9 dB RF input range from zero to full-scale. Visiting radio rallies and talking with local hams, we discovered an ideal radio, the Pye M2000 Private Mobile Radio (PMR) set. It produces a linear output voltage swing of zero to 3.75 volts over a 70 dB RF signal strength variation. In our system, this proportional DC voltage is fed, suitably scaled, into a buffer amplifier and then into the input of the A/D converter. As there are no RF gain controls on the M2000, there is always the same relationship between signal strength and this buffered output, ideal for estimating distance to the fox."

The display helped Dave and John win another annual trophy, but they wanted something even better. Next year they were back with the "Mark II" version. One feature was a noise plotting function. **Figs. 2** and **3** are the schematic and parts layout. "Used on weak signals, it rectifies the audio from the radio to produce a DC voltage that varies inversely with the amount of quieting in the receiver," Dave explained. "This voltage is fed to the display in the same way as in signal mode. Using this mode, the sensitivity of the system is extended by 20 dB."

Next time, I'll cover more of the improved version, which has "electronic persistence" and a unique way of accurately transferring bearings from the CRT screen to paper maps. Meanwhile, keep those letters, photos, and E-mails coming to the addresses at the beginning of this article.

Notes

[1] *Transmitter Hunting — Radio Direction Finding Simplified* by Joe Moell and Tom Curlee, published by TAB/McGraw-Hill, ISBN number 0-8306-2701-4.

[2] "Homing In: Toward the Perfect RDF System," *73 Magazine*, October 1992.

[3] "Homing In: What's That Whirligig?", *73 Magazine*, November 1992.

[4] "Homing In: Computers Point the Way," *73 Magazine*, January 1993.

[5] "Homing In: A Computer on Your Team," *73 Magazine*, February 1993.

[6] "Homing In: Motorized Beams, Santa Barbara-Style," *73 Magazine*, November 1993.

[7] "Homing In: The Foxcopter," *73 Magazine*, March 1994.

[8] McMaster-Carr Supply Company, P.O. Box 4355, Chicago IL 60680, [www.mcmaster.com].

[9] "Homing In: Follow the Fluxgate," *73 Magazine*, July 1997.

[10] "Homing In: Build the NorthScope," *73 Magazine*, August 1997.

[11] "Homing In: Low-Cost Monitor for the NorthScope," *73 Magazine*, September 1997.

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Hamfest Loser

When you put your money in your shoe, anything can start to happen.

"We'd better say 73, Johnny. We're nearly to Bowling Green, and we're starting to lose you. This is K8JWR, mobile on 160."

It was September of 1962. Dave and I were both 18, and on our way to the big Findlay Hamfest to make a killing. I had a 160-meter AM mobile in my '52 Chevy, Old Smoky, and we were saying so long to our friends in Toledo. Mobile on 160 was a snap: Open up the tuning slugs in the car's AM radio to raise the top end from 1605 to 1825 kc, steal 200 VDC from the radio's vibrator power supply, whip up a crystal oscillator driving a 6AQ5 to five watts, modulate with a carbon mic driving another 6AQ5, wind a 100-turn loading coil, and you're on!

The big trouble was that the rear suspension of the car kept bottoming out every time we hit a bump. You see, we had about 400 pounds of RG-59U coax in the trunk, and we were fixing to sell it at a penny a foot.

Dave and I had been working for a company that provided cable TV for several apartment complexes in Toledo. (This was before citywide cable came in.) That summer, we had replaced nearly two miles of cable that had losses of up to 6 dB per 100 feet at 200 Mc. It was no good for TV or VHF ham work, but the losses at 28 Mc and below were negligible.

We set up on a picnic table in the park and took turns reeling out the cable. It sold like beer at a ball game on a hot day. When Dave's turn came to man the table, I strolled the grounds to see what the hamfest had to offer. The first thing I saw was a guy with a bushel of big bright red apples — ten cents each. (Remember, this was 1962 — inflation has been about a factor of six since then.) I bought one, and munched contentedly as I continued my stroll.

The second thing I noticed was a military surplus communications receiver — BC-348 or some such number. The reason this caught my attention was that I had been itching to work some 20-meter DX, but my home receiver was an S-85. It had tin foil for a chassis and rubber bands for dial cords. When somebody slammed a door downstairs, the received frequency in the shack upstairs jumped 500 cycles. Military receivers, I knew, were built like the proverbial tank.

The guy was asking 25 bucks for it, and was probably hoping to get $22. I crept behind a tree, checked my wallet, and put all but seventeen dollars and forty-two cents in my shoe. Returning, I put on my best "poor orphan child" act and turned my pockets inside-out for the guy. It melted his heart to see that I was willing to give my last penny for that receiver, and he let me have it.

I really did give almost my last dollar for a 20-meter vertical antenna at the other end of the field. Somebody had told me that you needed a low angle of radiation to work DX on 20, and that a vertical would do it.

When I got back to our table, Dave had just sold the last of the coax, and we split the proceeds — $39.60 each. Triumphantly, we loaded the receiver and antenna into Old Smoky and headed for home. About halfway there, we noticed rain on the windshield — but there wasn't a cloud in the sky. Then we started hearing ominous clunking noises, and the temperature gauge started moving up toward the peg. Water pump failure!

We pulled into a gas station; gas stations didn't sell lottery tickets in those days, they fixed cars. We spent two

This story originally appeared in *The Hertzian Herald*, newsletter of the Monroe County (MI) Radio Communications Association (MCRCA). It reportedly is fiction.

Photo A. *Here's the author today, with the Hallicrafters S-85 and Heath DX-35 that survived his 1962 hamfest adventure. The defunct BC-348 and the vertical are long gone.*

hours shooting the breeze while an old guy in bib overalls fixed the car. When I looked at the bill, it was $39.50. My hamfest profits were wiped out! But I still looked forward to setting up my 20-meter DX station.

When we got home I put the S-85 face-to-the-wall in a corner and proudly hefted the old military receiver onto the bench. It was sensitive and rock solid on 20 meters. I banged on the top to show Dave that the frequency didn't budge, even under severe shock. The second time I banged it, the receiver went dead.

Continued on page 58

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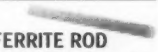

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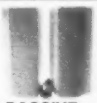

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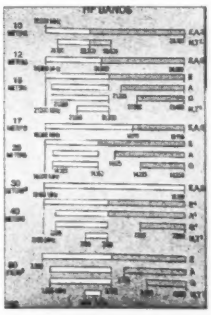

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Morse Code Decoder Chart

NOT for taking the test.

To use the chart, look at the middle of the left side of it, at the left side of the junction of the "E" and the "T" rectangles. Then if you hear a "dit" or a short sound, move your eye up and slightly to the right to letter "E". If, on the other hand, the first sound is a "dah" or long sound, go slightly right and down to letter "T". If that is the end of the letter sent, you have properly identified it as an "E" or a "T". If the letter continues, simply move your eye slightly right and up for dit or down for dah.

For example, if ". ." is sent, move your eye up and then up again as it goes to the right and stop on "I". If ". -" is sent, go up and then down to "A". If "- ." is sent, go down and up to "N". If "- -" is sent go down and down to "M".

One desirable feature is that the chart encourages the user to concentrate on the letter being transmitted, and not on writing it. Copying a few letters or a few words behind the transmission is characteristic of high speed CW operators. If you start doing what they do, high speed will come quicker and easier.

When I was teaching marine electronics to members of the United States Power Squadron Boating Club, I drew the chart as a supplementary training aid to the text. The students were not required to learn the code, but with the chart they could understand it. For example, they could recognize the one or more Morse letters transmitted by shore-based or floating navigational aids, like flashing lights or radio beacons. When a boater knows the identity of the navigation aid, he can get a fix on his location. That information could be vital in the case of a storm or fog, or the need for urgent help.

Anyone can learn 5 wpm International Morse Code after a few hours practice with this chart. Then, after learning some electronics theory and radio rules, you can pass the exam under the new 5 wpm rules (without using the chart).

The Morse decode flow chart was not original for me. Like everyone else, I stood on the shoulders of others. I saw the chart in a magazine, perhaps 30 or 40 years ago — long before the computer flow chart craze. The chart had enormous impact on my God-given bionic memory. I remembered the chart, but unfortunately forgot the originator and his publisher. My thanks (and apologies) to whoever that might be.

As you can see, a second benefit of the chart is enabling a person to receive an emergency message even though he does not know the code.

A third feature is that the chart is smaller, lighter, and cheaper than electronic Morse code decoders. In addition, it has nonvolatile memory — if you don't spill the coffee on it or store it in the sunlight for too many months. Then, also, you will save money because no batteries are required. You can use your savings to buy more magazines like this one, which helps support unemployed radio/electronic wizards, like me, as free-lance writers.

It is necessary to use a bit of caution while using the chart, because it can become a time gobbler, just like a computer. One Scoutmaster in the US Power Squadron Boating Club heard me explain the chart. But when he demonstrated it to his Scouts, he had a BIG problem. His Scouts went bananas — absolutely bananas — and wanted to keep practicing all night with it. 73

E	I	S	H
			V
		U	F
	A	R	L
		W	P
			J
T	N	D	B
			X
		K	C
			Y
	M	G	Z
			Q
		O	

Table 1. *The dummy's dynamite, cyclonite, Morse code decoder flow chart, with nonvolatile memory. Read left to right and go up for dits and down for dahs.*

The Digital Port

continued from page 43

Also, I found how to get the two auxiliary windows down with their tuning indicators so I could monitor three PSK31 frequencies at once. This required at least a small explanation so I could see what the author had done. Back to the Help file. Very nice indeed.

Something hit me when I was getting the three panes to work and display different messages from different signals. There are other programs that copy multiple signals, but the most of the time we would be contented to have one large screen. I should say we usually desire one large receive pane. With this software you do not have to have the auxiliary panes in place except when you wish to track more than one QSO.

That made a lot of sense to me. Most other multipane software allows you to adjust the size of the individual panes, but here you simply eliminate that which is not needed. No clicking and dragging to distort the default sizes.

Speaking of sizes, I found a solution for us teensy monitor users who wish to have two panels displayed simultaneously while using this software package. To explain why, you will find if you are using Zakanaka interfaced with Logger, you will be frequently clicking the task bar to see what is contained in the Entry box in Logger, then going back to the Zakanaka panel for communication.

If you minimize Zakanaka and expose Logger in the background you can simply move the Entry box for Logger alongside the minimized Zakanaka display. You can see everything that is necessary when you need to see both displays. Then when you are satisfied all is in working order, you can maximize the Zakanaka if you feel the need to access certain controls. Works great until a larger monitor falls down the chimney some future Christmas.

The bells and whistles built into these programs are little short of fantastic. I haven't used the combination long enough at this writing to do them justice, but if I did, I fear the writing would become book length. That is why the Help file is so lengthy. They couldn't describe all the features and tell how to get them working properly and condense it much more.

I am having so much fun with this software after only reading ten pages, I wonder if reading the other 230 will increase the sensation proportionately. I like to read. Maybe it will pay off. The only problem is it isn't the kind of suspenseful plot that you take to bed with you and it keeps you from putting it down. You never know until you tries.

Other happenings

There is a new version of HamScope out, Version 1.3 at this writing. A lot of effort has been put into the upgrade. When I first tested the software, one of the dominant complaints concerned the RTTY module. That problem has been thoroughly overcome by a very sure maneuver, The program works with the MMTTY engine now. Can't get much better than that.

There is now rig control for the popular rigs, and it works. Plus the log function will now start and export directly to Logger as well as the YPLog software. It has become a very complete digital communication package. Well worth a look. You will definitely need a fairly fast processor. All this enhancement eats up the memory.

I will try HamScope in the faster computer now that it interfaces with the rig. In the case of the HamScope, you must install the MMTTY engine in the HamScope file

Continued on page 56

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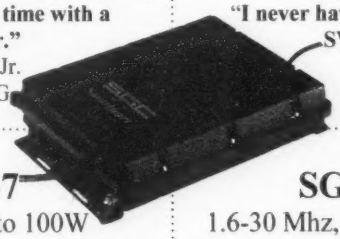

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The Digital Port

continued from page 55

folder whereas with the Zakanaka, it comes in the package.

I find I have been remiss in keeping up with other developments in this digital world. It seems I have left the Creative Software folk out of my regular visits through digital territory. I see they have now incorporated PSK31 modules in their software for the popular multimode TNCs.

The only one I recall quickly that originally came out of the box ready for PSK31 is the SCS unit and the few of those I have worked were in the hands of very satisfied hams. The sigs were clean and the operators felt they were easy to set up and use. So you know what that means: I will have to dust off the PK-232MBX and give some of these packages a spin.

There are several pieces of software out which achieve similar results. The one that comes to mind as I sit here is the new Version 2 of MixW. The beta testers are saying the program does an excellent job driving the various controllers.

Another program I haven't kept up on is the RCKRtty, which I know works well with the PK-232 and now does PSK31 via the soundcard. There are a lot of options to check out with all the imaginative software developers on the loose out there. There is something to suit every situation.

If you have questions or comments about this column, E-mail me [jheller@sierra.net]. I will gladly share what I know or find a resource for you. For now, 73, Jack KB7NO. 73

Kenwood's Hot New TS-2000

continued from page 17

menus, it is a breeze to operate. The various menus may be selected by pressing the lower left-hand button for more than two seconds. Repetition of that procedure toggles through the three main menus. A quick touch toggles through each of the four submenus. PTT is toggled by pressing down on the two volume controls on the right, and tuning control is switched from coarse to fine by pressing in on the tuning knob. This is quite an impressive ergonomic design.

Imagine the possibilities. You could have the TS-2000 sitting farther back in the motor home at a favorite operating position, and the head up front by the captain's chair for those rare times that you are actually driving down the road. Included with the RC-2000 are extension cables for the microphone, control head, and for the great sounding speaker that is included. What will they think of next, field programmability of the radio and the head? Stand by!

Wrap-up

We at *73* have devoted two articles to the review of this radio, and we did not cover it all. There is more yet to be said, but that would take away from your own joy of discovery. As I said before, the TS-2000 and its assorted options are formidable examples of what can be brought forth to the market when creativity is allowed to flourish. Kenwood has done a great job on this radio.

I warn you, however: This radio does so much that your own imagination will kick into high gear, and you'll be wishing it did even more! 73

Bring Back the Magic!

continued from page 23

reasonably technically competent, and, say what you will, this hobby IS a technical one, and long may it remain so. If the license were easily obtained, it will be likewise easily discarded.

I can already hear you asking yourself: "So, what can I do about it?" Well, you can do a lot. Consider becoming an Elmer yourself. Remember the help that you had when you were trying for your license. You can spread the word of amateur radio into schools, colleges, and youth clubs. Put on a few demonstration stations at special events. I realize that there are quite a lot of you doing this now, but we obviously need more. Modern technology is mandatory in amateur radio these days; the PC, for example, is an essential part of a well-equipped modern shack. However, the younger generation can feel some of the magic that we had by constructing something simpler to start with. There are plenty of QRP circuits around that are easy to build and can give a huge amount of satisfaction to the new amateur. To think that a circuit board of approximately two inches square can transmit a signal across that vast Atlantic Ocean — surely, this MUST bring some of that magic back again!?

I wonder what YOU think?

So do we. Is amateur radio a lost cause? Is it possible to bring back the magic? Is the magic even gone to begin with? We invite you to share your thoughts on this by writing to MAGIC, 73 Magazine, 70 Hancock Rd., Peterborough NH 03458, or by E-mailing us, with MAGIC as the subject, at [design73@aol.com]. — ed. 73

Hamsats

continued from page 45

AMSAT-Houston group, with the Houston Amateur Television Society and the Houston QRP group. All the best and 73!"

Note that the message stated the call, name of the group, operating class, where they were located (the grid square would be helpful), and how many operators were in attendance.

Satellite digipeat QSOs and APRS short-message contacts are worth three points each, but must be complete two-way exchanges.

The use of terrestrial gateway stations to uplink/downlink is not allowed.

Contacts with the International Space Station (any mode) are not counted for AMSAT Field Day operations, even if available.

If FO-29 is active, the JA transponder can be used for analog CW and phone activities under the analog transponder rules, and the JD system can be used as a separate transponder under the digital rules.

3. Operating Class

Stations operating portable and using emergency power (as per ARRL Field Day rules) are in a separate operating class from those at home connected to commercial power. On the report form simply check off Emergency or Commercial for the Power Source and be sure to specify your ARRL operating class (2A, 1C, etc.).

The Satellite Summary Sheet (AMSAT Web site) should be used for submittal of the AMSAT Field Day competition results to Andy MacAllister W5ACM, Vice President User Services, 14714 Knights Way Drive, Houston TX 77083-5640. Make sure to also send your Field Day photographs with your submission! The deadline for submissions is August 1, 2001. You can also

send your entry sheet electronically to [andrew.macallister@daniel.com].

If your score is in the top five, you will be requested to submit dupe sheets for the analog contacts and DIR listings and downlinked files for the digital contacts. 73

Letters

continued from page 8

They are in for a very rude awakening in the Ice Age underway, whether one calls it the Next Little Ice Age, or the Next Major Glaciation, since we likely have already terminated the Holocene Interglacial. They do a great disservice to humanity, since they assume they will have a greater control of their lives, as the number of volcanic eruptions, quakes of 6M and greater, tornadoes, and severe storms is in a rising trend, with high latitude precipitation since the mid-Twentieth Century. There is no place to go, to escape these effects, though their effects may be less severe in some places.

The result is the collapse of empires, and strong centralized large government functions, as has happened in the past, as was pointed out by Prof. Raymond Wheeler, of the University of Kansas, some time ago in his "Journal of Human Ecology."

No matter where you go, you cannot escape your geological environment of the Natural World, no matter what your level of arrogance, until you are dead.

Since you can't escape the power hungry, greedy politicians, I suggest buying survival books and developing survival skills.

Hmm, how are you doing with emergency power for your station, should the power go off? Has your club an emergency van or trailer ready? — Wayne. 73

Field Day Follies

continued from page 35

Zulus mixed up in it somehow, too, so it don't sound good."

With that, he turned and fled into the woods. I heard the car door again, and then the engine revving up, and the headlights knifed into the woods. Well, he forgot to turn around, so instead of heading back to the highway he drove straight into our clearing and pancaked into the sand pit.

They stayed locked in there for a good ten minutes before we could convince them that, in spite of my northern speech, we weren't Yankees or federals, and we didn't have any sinister x-ray machines, and we weren't after anybody's whiskey. But there was no way we could make them understand what a radio Field Day or a phonetic alphabet was.

Finally they came out, a fellow of about our own age, and a shy girl with the sweetest Dixie accent. So we got the generator gassed up again, and got some lights back on, and with all of us pulling, we got the car out rather easily. But when the lights caught the lovers, Denny and I nodded knowingly at each other. We had seen at the same moment that both the guy and the girl were wearing one black sock and one pink one. 73

Field Day 2000

continued from page 34

items such as coax, coaxial adapters, rope, tape, tools, etc.

- Keep fresh fuel in the generator. Use a fuel stabilizer if available.
- Run periodic "emergency" sessions.

XAR concluded that a few more exercises following a similar plan were deemed desirable in preparation for a "real" emergency. Next time, we'll do even better. 73

On the Go

continued from page 46

extremely important. We need you to be involved and, hopefully, letting you in on a few of the tips and techniques might make it just a little bit easier to get started. 73

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Hamfest Loser

continued from page 53

No amount of tapping, probing, or tube checking would bring it back. Without a schematic, even the most powerful shamans I could summon were helpless. So it was to be the S-85 and the vertical.

I mounted the vertical, proud and tall, at the peak of the roof, and attempted to load my DX-20's fifty watts into it. It didn't seem to be taking power. No one was answering my calls. I borrowed an SWR meter: off the scale at ten-to-one. We tried redoing the connections, even an antenna tuner: no success. A few years later, the vertical long pulled down, I learned that a roof-mounted vertical needs radials to work at all; why hadn't somebody told me?

So I worked no 20-meter DX that winter, and my hamfest profits amounted to 10 cents. Just enough to buy another apple at the hamfest next year. It was a big, juicy, Delicious apple. 73

QRX

continued from page 6

DTV Update

According to news reports, lawmakers have warned broadcasters and consumer electronics makers that the government may step in to speed the move to digital television.

Television broadcasters are supposed to move from analog to digital by 2006, or when the penetration rate for televisions that can receive the high-definition signals reaches 85 percent, whichever comes later.

However, most regulators, lawmakers and industry representatives believe that deadline will slip by, because few consumers have bought the TV sets necessary to receive high-definition signals. Potential buyers have been discouraged by the high cost of digital receivers and televisions, and there is limited high-definition programming available.

But regulators say that digital must move forward at all cost. And according to Louisiana representative Billy Tauzin, who chairs the House Energy and Commerce Committee, he is considering the idea of imposing a hard deadline of 2006 to force everyone to work together to bring about the transition.

However, a hard deadline would be tied to assurances that consumers could purchase the necessary digital television receivers. And without them or at least very low cost converter boxes, there will be no transition to digital TV. At least not in the short term.

Thanks to David Black KB4KCH, via Newsline, *Bill Pasternak WA6ITF, editor.*

Cords Across America

By now, everyone has heard about the power crisis in California. And while that state's politicians argue as to how to keep the lights burning, one midwest radio personality has his own idea. Hello, Cords Across America.

Unless you live in the midwest, the name Randy Miller probably does not mean very much to you. But for those who love the Nashville sound, Young Country Q-104 is where they keep their dials set.

Q-104 is actually radio station KBEQ FM in Kansas City, Missouri. It also happens to be the on-air home of the sometimes irreverent morning man Randy Miller.

What Randy Miller wants to do is to plug in an electrical extension at KBEQ. Then, have someone a few feet to the west attach another wire to it. And then have someone else plug into that. The idea is to keep going until there is an extension cord that stretches the 1,300 miles from Kansas City to the California state capital.

OK. We all know that Miller's idea is probably nothing more than a fun radio promotion. Even if KBEQ could get the necessary federal and state waivers to permit an electrical extension cord to stretch from Kansas City to California, the amount of electricity available in Sacramento would probably not even light a 10 watt bulb. But you have to admit that the thought of thousands of ten- or twenty-foot extension cords across the Great Plains and climbing the Rocky Mountains would be fun to see.

Thanks to Cathy Anno KBØFDU, via Newsline, *Bill Pasternak WA6ITF, editor.*

NYC Blackout — 1965

The date was November 9, 1965. The place — the northeastern United States. And shortly after 5 p.m., the lights in New York City started to dim. Within three quarters of an hour, the city and the region were blacked out. While there have been many tales of what it was like to have been in the Big Apple when the lights went out, here's where you can find what perhaps is the best description yet: the blackout through the eyes, ears, and voice of one of America's best known radio air personalities of the time, Big Dan Ingram.

Ingram was on the air that afternoon doing his normal afternoon ride-time program when things started to go wrong at the station. Unaware that the power in the region was dropping away quite rapidly, Ingram continued his show until — well, hear it for yourself. A condensed aircheck of his program can be found in Real Audio on the [www.musicradio77.com] historic Web site. And after you listen, spend some time at [www.musicradio77.com], because it is a trip back through the golden days of Top 40 AM radio that we are not likely to ever hear again.

Thanks to Newsline, *Bill Pasternak WA6ITF, editor.*

Telephone Factoids

Have you ever wondered how many people actually have telephone service?

As of July 2000, 99.1 million households had telephone service. AT&T's share of interstate carrier toll revenues decreased from 90% in 1984 to 41% in 1999. This, while WorldCom's and Sprint's collective shares accounted for about 33% in 1999 and more than 700 smaller long distance carriers accounted for the remaining 26%.

High-speed data lines connecting homes and small businesses to the Internet with speeds of over 200 kilobytes per second in at least one direction increased by 57% during the first half of 2000. That accounted for a total of 4.3 million lines or wireless channels.

Last, the number of calls made from the United States to other countries increased from 200 million in 1980 to 5.2 billion in 1999. But on average, carriers billed only 51 cents per minute for international calls in 1999. That's 50% less than the rate charged in 1980.

Thanks to the CGC Communicator, *via Jeff Clark K8JAC, via* Newsline, *Bill Pasternak WA6ITF.* 73

NEVER SAY DIE

continued from page 4

Sibrel mentioned one other very strange coincidence. That was the retirement of NASA Administrator James Webb at 62, just a few months before the Apollo 11 flight. He had been the head of NASA since 1961 — during the entire program leading up to the fake flights. Then, instead of staying on a few more months and enjoying the results of his seven years of work, plus a lot of glory, he retired. Was he abandoning ship early just in case the hoax might be exposed?

Webb died in 1992, so we'll probably never know.

Miller

What ever happened to Don Miller W9WNV? I was asked that recently by a reader. Golly, I haven't heard from Don in years. With good behavior he should be getting out of prison soon.

Hey, I could talk about Don for an hour. He cut quite a swath in amateur radio in his day. But some of my editorials about his adventures made him mad and he sued me for interfering with his making money from DXers.

When Don got on the air from a couple of rare spots, he quickly discovered that

many of the hams on the ARRL's Honor Roll had no honor, and would pay plenty to make sure that they got credit for every new country that came on the air. So Don charged 'em $50 a country for a contact and card. If they didn't pay up front, he was unable to hear them when they called. Mind you, this was in the 1960s, when $50 was more like $500 or so today.

By operating from one rare country after another, Don had a steady stream of unreported to the IRS cash coming in the mail. He bragged to a ham I visited on Western Samoa that he was making over $50,000 a year with this scam.

Don was not dumb. When a well-known WØ got on the air from Morocco and pretended to be operating from one nearby African country after another, complete with QSL cards, Don got the hint. When the ARRL found out about the North African DX scam, they tightened up their authentication requirements. That didn't bother Don — he was just more creative in his forging of official documents.

Don called me one day, wondering if I might be interested in going with him on a DXpeditioning trip to the Indian Ocean area. Well, I was, until he explained what he was going to do. His plan was to operate from a bunch of rare Indian Ocean spots, but to never actually be where he said he was. No, thanks.

A couple years later, I visited Burma — I had a card from working Don there — only to find out from a local ham that Don had never really been there. The word was that he went on the air from northern Thailand, pretending to be operating from Burma, Vietnam, Laos, and Spratley Islands. I worked him in all those spots and had the cards.

When I exposed his scam, he sued me for damaging his income from his DXpeditions. Fortunately I was insured, so that didn't cost me anything.

But that apparently put him out of the DXpedition business. Being an MD, he looked around for something new to do, and settled on opening medical businesses to tap the Medicare millions. In 1982, he went to prison for 25-to-life for paying a janitor $5,000 to kill his wife and burn the medical building for the insurance. He may already be out of prison and cooking up something new. I wonder if he'll want to get his old call back. If you run into Don, maybe you can talk him into doing a series for *73* on his DXing exploits. It would make great reading.

Near-Death Experience

Continental Airlines came tha-a-at close to killing me. What a bummer. I've been flying on commercial airline flights since 1927, and this is the first time anything life-threatening has happened.

Sherry and I were flying from Boston to Lisbon. Usually, a good ham friend of mine who works for Continental is able to bump us up to first class, giving us much more comfortable seats, but the airline stopped that nonsense, so we made the flight crammed into the economy-class seats. That's not a problem for Sherry, but I'm about six feet tall, so finding a place for my longer legs is an uncomfortable challenge.

I did the best I could, but when the stewardess woke me for arrival, I found that my right leg had gone totally to sleep. It had no feeling, other than it hurt like hell. I tried to exercise it to get the blood circulating, but there was no noticeable improvement.

When we landed I hobbled off the plane on my left leg. Intense pain. It was two days before I was able to walk more than a few feet. Months later I could still feel some discomfort. It sure ruined our visit to Portugal.

What I didn't know then was that deep-vein thrombosis (DVT) is a fairly common problem, with around 800,000 people a year being hospitalized, of which about 200,000 have a pulmonary embolism and die. Lousy odds.

A blood clot forms in the leg. When it breaks loose it zips up to the lungs, which stops you from breathing. Lights out. I wonder if the airlines ship the bodies home free of charge ...?

If I'd been a smoker or overweight, I probably would be just another statistic now. Fortunately, I was in good physical shape, so I survived.

Mad With Desire!

The new Ramsey catalog arrived, giving me all kinds of ideas for developing small businesses. Just what I need, another business.

Many years ago, I recommended that hams consider the security business. Hey, we're electronic experts, right? Well, we were then, at any rate. Several readers liked the idea and have built multi-million-dollar security businesses as a result.

Just about every business has a need for some sort of security protection. When I bought a Peterborough motel and turned the rooms into offices and a computer software development lab where the restaurant had been, I put switches on all the doors and hooked them to a small transmitter. That way, at night I'd hear a tone a mile away at my home anytime anyone opened a door.

Sure enough, one night the signal woke me up. I called the Peterborough police and they caught two guys who had broken in and were about to steal some computers from the lab. It was an exciting night for the burglars, the police, and me.

Ramsey has AM and FM transmitter kits, low- and medium-power; TV transmitters, hi-fi stuff, video — there's just too many brain-watering gadgets, and all quite modestly priced. If this array of great stuff doesn't get your brain going, you need a deep brain enema to clear out the constipation.

Power supplies, test equipment, learning kits, weather stations, car audio, high-end audio, mini-kits, motion detector, fox-hunting, rocket tracking, etc. Ramsey, 793 Canning Parkway, Victor NY 14564, [www.ramseykits.com].

Hmm, just what I've been looking for, right there on page 6, and only $120 ready to use — a mini mixer. Well, I've been wanting to make some audio tapes and be able to have some music gemixt. I want to do one on the day Khrushchev saved amateur radio. And another on the greatest disaster in the history of the hobby.

And then there's that $120 Minox-size digital camera on page 8 that can shoot 360 pictures that I can download into my iMac DV! Hmmmm.

End Your Pain

Money isn't everything. It can buy sex, but not love. It can often cause pain and suffering. I'm telling you this because I am your friend and I want to do my best to take your pain and suffering away.

So, just send me all your money and I will suffer for you. Cash only, please. Your caring friend, Wayne.

CW vs. Phone

With countries all around the world dumping the Morse Code test, perhaps it's time the ARRL pushed the ITU to erase that requirement from the international rules.

But, what would we replace this obstacle with, you ask? Clearly, we have to have some sort of bar to keep just anyone from getting a ham ticket. The code test successfully kept millions of interested potential hams at bay, thus achieving the goal set by the ARRL when it got the FCC to increase the code speed required for licenses.

So, what other operating skill might we substitute for the code barrier? We don't want to open the flood gates and crowd up our bands again, right? Well, I have a suggestion (you knew I would).

Just as the Morse Code barrier was set up back when over 90% of ham

Continued on page 61

PROPAGATION

Jim Gray II
210 East Chateau Circle
Payson AZ 85541
[akdhc2pilot@yahoo.com]

Happy Solstice!

We are now approaching the summer "doldrums," when ionospheric absorption and atmospheric noise reach their peak, adversely affecting the whole HF spectrum. Fortunately, we are also riding the crest of Sunspot Cycle 23, so decent worldwide DX should be available most anytime on at least one of the bands.

Overall, expect afternoon over-ionization to weaken signals on ten through twenty meters, and atmospheric noise to limit nighttime activity on thirty meters and above. Early mornings, late afternoons, and evenings will be the most fruitful hours, but sporadic-E can unexpectedly liven things up almost anytime, so don't ignore this possibility when looking at the charts. When propagation on the HF bands is so poor that you can't even manage a domestic contact, just tune up your VHF rig and enjoy the excellent seasonal conditions available there.

As far as solar activity is concerned, June should be mostly quiet despite numerous sunspots and high solar flux. My calculations indicate that the daily planetary geomagnetic index (Boulder-A) will be fairly low for two-thirds of the month. When the Boulder-A index is low and the solar flux index is high, we typically experience better than average propagation conditions.

Nonetheless, I'm forecasting that the 11th through the 18th will be very unsettled, with a high potential for strong solar flares or CMEs during the period. When ejecta from these events is directed toward earth, we experience a geomagnetic storm. Depending on the density of heavy particles in the solar stream, effects can range from temporary shortwave fadeouts to catastrophic failures in the electrical power distribution grid.

To stay on top of current solar conditions, trends, and forecasts be sure to monitor WWV at 18 minutes past each hour or visit the Space Environment Center Web site at [http://www.sel.noaa.gov/radio].

Happy solstice, and good DXing to all!

June 2001

SUN	MON	TUE	WED	THU	FRI	SAT
					1 F	2 F-G
3 G	4 G	5 F	6 F-P	7 F-G	8 G	9 F-P
10 F	11 F	12 F-P	13 F-P	14 F-P	15 P	16 VP
17 P	18 F-P	19 F-G	20 G	21 G	22 F-G	23 F
24 F-G	25 G	26 F-G	27 G	28 G	29 G	30 P

EASTERN UNITED STATES TO:

GMT:	00	02	04	06	08	10	12	14	16	18	20	22
Central America	15-20	(15) 30	20 (40)	(20-40)	x	(20)	20	(20)	(15)	(15)	15 (20)	(10) 17
South America	15 (20)	(15) 20	20 (40)	(20-40)	(20)	x	(15)	(15)	x	(10)	(10-20)	(10) 20
Western Europe	20	20	(20-40)	(40)	x	(20)	x	x	x	x	(20)	20
South Africa	x	(40)	x	(20)	x	x	x	x	(15)	(15)	x	x
Eastern Europe	20	20 (40)	(20)	x	x	x	(20)	x	x	(15)	(15)	(20)
Middle East	20	20 (40)	(20)	x	x	x	x	x	x	x	(20)	(15)
India/ Pakistan	(15-20)	(20)	x	x	(20)	x	x	x	x	x	x	x
Far East/ Japan	(15)	x	x	x	x	x	(20)	(15-20)	(15)	x	x	(15)
Southeast Asia	(15-20)	x	x	(20)	x	x	(20)	x	x	(15)	x	x
Australia	(15)	(15)	x	x	(20-30)	(20-30)	(20)	(20)	x	x	x	x
Alaska	(15-20)	(15-20)	(15-20)	20	20 (40)	(20-40)	(20)	(20)	x	x	(15)	(15-20)
Hawaii	(15-20)	(15-20)	(15-20)	20	20 (40)	(20-40)	(20)	(20)	x	x	x	(15)
Western USA	(10) 30	(10) 30	(10) 40	(15) 40	(20) 40	(20-40)	(15) 20	(10) 20	(10-20)	(10-20)	(10-20)	(10) 20

CENTRAL UNITED STATES TO:

Central America	(10) 20	(15) 30	20 (40)	20 (40)	(20-40)	(20)	(20)	(15) 20	(15-20)	(10-20)	(10-20)	(10) 17
South America	10 (20)	(10) 20	(15) 30	(15) 30	(20-40)	(20)	(20)	(15)	(15)	(10)	(10-15)	(10-20)
Western Europe	(15) 20	20	(20-40)	(20-40)	x	(20)	(20)	x	x	x	x	(15-20)
South Africa	x	x	(40)	(20-40)	(20)	x	x	x	(10-15)	(10-20)	(20)	x
Eastern Europe	(20)	(20)	(20)	(20)	x	x	(20)	(20)	x	(15)	(15-20)	(15-20)
Middle East	(15-20)	(20)	(20)	(20)	x	x	x	x	x	x	(20)	(20)
India/ Pakistan	(15-20)	(15-20)	(20)	x	x	x	(20)	x	x	x	x	x
Far East/ Japan	x	(15)	(15)	x	x	(20-40)	(20)	20	(20)	x	x	x
Southeast Asia	(15)	(15)	(15-20)	(20)	x	x	(20)	(20)	(15-20)	(15)	(15)	x
Australia	(15)	(15)	(15)	(20)	20 (40)	(20-40)	(20-40)	20	(20)	x	(15)	x
Alaska	(10) 30	(10) 30	(10) 40	(15) 40	(20) 40	(20) 40	(20-40)	(15-40)	(10) 30	(10-20)	(10-20)	(10) 20
Hawaii	(15-20)	15 (20)	(15-20)	20	20	(20)	20	(20)	x	x	x	(15)

WESTERN UNITED STATES TO:

Central America	(10) 17	(15) 20	(15) 20	20	(20)	(20)	(20)	(20)	(20)	(10-20)	(10-15)	(15-20)
South America	(10-20)	(10) 17	15-20	(15) 20	(20)	(20)	(20)	(15)	(15)	x	(15)	(10-15)
Western Europe	(15-20)	(20)	20	(20)	x	x	x	(20)	(15)	(15)	(20)	(15-20)
South Africa	x	x	x	(20)	(20)	x	x	(20)	(20)	(15)	x	x
Eastern Europe	(15-20)	(20)	(20)	(20)	x	x	x	(20)	x	x	x	(15-20)
Middle East	(20)	(15-20)	(15-20)	(20)	x	x	x	x	x	x	x	(20)
India/ Pakistan	x	x	(15)	x	x	x	x	(20)	x	(15)	x	x
Far East/ Japan	(15)	(15)	(20)	(20)	(20)	(20-40)	(20-40)	(20)	(20)	(15-20)	x	(15)
Southeast Asia	x	x	(15)	(15)	x	(20)	(20)	(20)	(15-20)	(15-20)	(15)	x
Australia	(10-15)	(10-15)	15	(15-20)	20	20	20	(20)	20	(20)	x	(15)
Alaska	(10) 40	(10) 40	(10) 40	(15) 40	(20) 40	(20) 40	(20-40)	20-40	(15) 40	(10) 40	(10) 40	(10) 40
Hawaii	(10-15)	(10-20)	(10-20)	(15-20)	20	20	(20-40)	20 (40)	(20-40)	x	x	(10-15)
Eastern USA	(10) 30	(10) 30	(10) 40	(15) 40	(20) 40	(20) 40	(20-40)	(15-20)	(10) 20	(10-20)	(10-20)	(10) 20

Table 1. *Band, time, country chart. Plain numerals indicate bands which should be workable on Fair to Good (F-G) and Good (G) days. Numbers in parentheses indicate bands usually workable on Good (G) days only. Dual numbers indicate that the intervening bands should also be usable. When one number appears in parentheses, that end of the range will probably be open on Good (G) days only.*

Band-by-Band Summary

10 and 12 meters

Daytime absorption can drastically weaken signals, but good DX conditions may still be found on paths to the Caribbean and Latin America, with occasional openings to Africa and Australia. Expect signals to peak during local afternoon, but look for brief sporadic-E openings anytime through late evening. Short-skip will be between 1,000 and 2,000 miles.

15 and 17 meters

Good DX should be available to many parts of the world, with maximum signal strength occurring in the late afternoon. Long summer days in the northern hemisphere will allow these bands to be worked well into the evening on good (G) days. Look for short-skip up to 2,300 miles.

20 meters

Good worldwide communications will be possible, with the strongest daytime signals occurring shortly after sunrise or in the late afternoon and early evening hours. Nighttime DX will be quite good, especially to the west and northwest. Short-skip will be between 500 and 2,000 miles during the day and from 1,000 to 2,300 miles at night.

30 and 40 meters

Good DX is likely to be heard throughout the night as long as atmospheric noise isn't too great, but static from thunderstorms will undoubtedly intensify as the month progresses. Daytime openings may be possible, particularly between the coasts or to Alaska, but skip will be limited to 750 miles or so. At night, skip will fluctuate from 500 to over 2,000 miles.

80 and 160 meters

High static will mask signals on these bands most of the time, but occasional weak openings may occur between sunset and sunrise. Peaks will usually come near midnight and in the predawn hours. Short-skip will vary from 1,000 to 2,000 miles. 73

NEVER SAY DIE

continued from page 59

communications was taking place via CW, how about a speaking test, now that 90% of ham communications are on voice?

The code test was, of course totally unnecessary in the past. If you didn't know the code you couldn't contact anyone, so everyone had to learn it to make any contacts. Today, though everyone knows how to speak, very few seem to have a clue when it comes to actually communicating.

Instead of our volunteer examiners testing for code recognition, how about their entering into a mock-up contact as part of the test? The applicant would then have to demonstrate an ability to enter into an actual conversation with the examiner, and not just a recitation of the equipment and antenna being used, or the weather.

Well, maybe we should allow the weather, elst around 90% of the guys I'm hearing on the air would never pass the test.

When I was ten I went to school in Washington DC and we had a daily mock radio announcer session for everyone. They had a microphone set up and each of us had to read a selected news item from the newspaper. That had us reading the papers every night, looking for unusual items to read the next day. We had to have a backup, just in case someone else picked the same subject and got to the mike first.

This helped make us more aware of current events, and to get over our fear of speaking in front of a group.

Now, when you go on the air, do you have anything interesting to talk about on hand? A news item? Something from a magazine? Like maybe my editorial essays?

We've been greatly hobbled because we've never bothered to develop duplex systems. I remember some wonderful contacts back in the 1930s where a bunch of us would get together on 160m, each rebroadcasting someone else from the high to the low end of the band, or the reverse. In that way, a half dozen or more of us could hear each other through the network. That was a whole different kind of ham radio, and one I dearly miss.

We can do that today if we use low-power rigs on different ends of a band, with separate transmitters and receivers. Or work crossband. Or, much better, develop a time-sharing system on one frequency.

How about getting started on 2m with two receivers at the repeater. We'd have to use headphones to keep from getting feedback, but at least we'd be able to talk with each other without having to say, "Over..." Then we could add a third and fourth receiver, all tuned to different inputs, at the repeater. C'mon, guys.

The Club

Poor old Wayne, he's obviously lost his marbles. He sees conspiracies everywhere. What a nut case!

No, I have not lost my marbles. I still have them in a box out in the barn, left over from childhood.

And I don't buy into conspiracies without overwhelming evidence of a scam.

In this case, it's Congress. You know, the outfit that we rubes are unable to keep ourselves from re-electing over 98% of the time. Yeah, we really are rubes.

We've all watched wrestling and enjoyed it. Sure, most of us know it's phony baloney. It's a live performance for our amusement. But there are some rubes out there who just don't want to believe that it's all acting. Carefully rehearsed acting.

Well, it's the same with the Big Show in Washington. The Republicans and Democrats have at it in both the House and the Senate, calling each other insulting names and fighting over a few billion for this bill or that. And then they have lunch together, laughing over the day's performance for us rubes.

Clearly the "work" pays well, with senators spending an average of over $4 million to get re-elected every six years.

Washington is about power, not ideology. The show is to keep the money rolling in from the rubes to the RNC and the DNC. The last election extravaganza cost over $3 billion. That's peanuts compared to the prize money they get to spend — the $2 trillion budget (that's not counting even more trillions off-budget). That's $2,000 billion! And my, does the pork fly. Who says pigs can't fly? Powered by lobbyist money, almost anything is possible, even flying pork.

Hey, rube! How about getting off your turnip truck the next time around?

Brain Drain

Our bodies are 70% water and our brains, 85% water. So make a quick wild guess as to what part of the body will be the most effected when you dehydrate your cells.

For the average person anything less than a half gallon of water a day means cells are being dehydrated. That's why experts in the field are recommending that we drink at least eight glasses of water a day. But, if you've dehydrated your cells for years, the way I have, then the smart thing to do is to rehydrate. So I'm drinking at least 12 glasses a day. Dr. Lorraine Day, when she was totally curing herself of a huge breast cancer, drank 20 glasses a day.

And that's pure water, not that sewage coming out of your tap. Distilling your water is best. That'll get rid of the chlorine, fluorides, and anything else that can cause you problems.

Continued on page 62

NEVER SAY DIE

continued from page 61

Is there any connection between our dehydrating ourselves and brain problems such as Parkinson's and Alzheimer's? I'd sure be surprised if there wasn't.

No, drinking coffee and tea does not count as water. Nor does beer or wine. Nor milk. Water means water. Cool, clear, water.

Duh

When the average SAT math scores dropped from 500 to 424, the College Board responded by allowing the use of calculators. When that didn't help, they just added 20 points to all the math scores to jack them back up a bit — and 80 points to the, like, ya know, those … er … uh … verbal scores, for a total boost of 100 points. Well, they didn't want the students to feel badly about themselves. Hey, self-esteem is far more important than any actual education.

Also, I see where some colleges are dropping their use of the SAT scores. The estimate is that last year parents poured over $100 million into coaching for the SAT exams. This might be okay if the stuff the SATs test for had any serious relevance to our personal lives or careers. But what a waste of time and money teaching kids to get a better mark on a test!

Worse, the SATs are for most colleges the key to entry. By now, I hope you know what a ghastly waste of time and money a college "education" is. A contradiction of terms.

One of the main reasons for colleges dropping the SAT barrier to entry is that they want to attract more minority students, and blacks are scoring an average of 198 points lower than whites on the test.

Space Travel

One of the problems we'll face when we want to venture farther out in space than near-Earth orbit is protection from radiation. The government agrees that the maximum lifetime dose is 25 rads and that death always begins after 500 rads. So, how much radiation can we expect to encounter while traveling beyond the present low Earth orbits of our satellites and space stations, on out through the Van Allen Belt? At the speed of today's rockets (6.8 miles/sec.), while traveling through the inner Van Allen Belt, which is about 25,000 miles wide, we would expect an exposure of 1,800 rads. It's going to take quite a lot of shielding for any living thing to survive that.

Then, there's the radiation in space coming from Sun flares. This is the intense radiation that keeps the Van Allen Belt charged. It's estimated that there must be a minimum average of 0.32 rads per second in space. That would dose any spacefarers with about 270 rads per day once beyond the Van Allen Belt.

With Joe Firmage said to be planning on building a space hotel which would take tourists on trips around the Moon and then back to an Earth orbit, I wonder how it will be possible to protect his customers from the radiation hazards.

Please advise.

Leukemia

While almost everyone puts their trust in their doctor rather than make any effort to learn about their illness, it is gratifying to get letters from readers who have successfully defied the system. A note from one reader, who was diagnosed with chronic lymphocytis leukemia, and was "treated" with Cytoxan (cyclophosphamide), which did no good.

When he did some investigating, he found that the stuff is used for insect sterilization and experiments in chemical sheep shearing. That did it for him as far as chemotherapy was concerned, infuriating his doctor, who refused to "treat" him further. He then started using the bioelectrifier, along with some herbs and vitamins, and after six weeks he found that his lymphocytes, which had been around 400,000 cells per microliter (normal range: 800–4,000) and had invaded his bone marrow, were down to 7,000 cells per microliter.

I've written about Dr. Lorraine Day, who had "incurable" breast cancer. She's now totally cured. If you know anyone who has cancer, please get them to read my *Secret Guide to Health* and also get Dr. Day's video, *Cancer Doesn't Scare Me Anymore* (800-574-2437, and say hello from Wayne).

I've also explained about Dr. Henry Bieler's book, *The Incurables*, where he went into hospitals and treated children left there to die with incurable leukemia, and cured 100% of them by taking them off all milk products and giving them minced raw liver. Our bodies need protein, and they're designed to deal with raw meat, not cooked.

Okay, I've put down my stethoscope. For now.

Instant Surgery

Have you read about London's famous Dr. Robert Liston? Well, yes, this was 150 years ago, before Lister, but Dr. Liston set an all-time record when he amputated a man's leg in two and a half minutes (the poor guy died later of gangrene). He also managed to amputate two fingers from his assistant (who also died later of gangrene), plus he sliced through the coattails of a distinguished surgical spectator, who was so frightened that he'd been cut open that he died from fright. That's the only operation in history with a 300 percent mortality rate.

Those Bras

Could bras be killing women? In a recent study of 4,700 women, those who never wore bras had the same incidence of breast cancer as men: very rare. Women who wear bras 24 hours a day are 125 times more likely to develop cancer as women who don't. And those who wore bras more than 12 hours a day but didn't sleep in them had only 21 times the risk.

This was reported by Dr. William Douglass in his *Second Opinion* newsletter, which I've recommended in my *Secret Guide to Wisdom.*

It's interesting that this research was reported to the National Cancer Institute, the American Cancer Society, the National Organization for Women, and many more women's organizations. None responded!

When Dr. Sydney Singer first reported his discovery of the bra-cancer connection five years ago, he was laughed at by the "experts." This new study has lawyers all excited.

You can read Dr. Singer's 1995 book, *Dressed to Kill*, Avery, $12, for the details and references backing him up.

Laughing

It's no news flash that stress is a killer, yet we put up with stress, as we do with more and more slow killers we now know about (like refined sugar).

In an experiment, researchers at Ohio State University injected eight rabbits with large amounts of cholesterol. Eventually seven of the rabbits had heart attacks and died. But one was still alive and healthy. It took a while for them to find out what had made the difference. It turned out to be a lab assistant who had picked up that rabbit and stroked it every day.

Maybe you're familiar with how Norman Cousins cured himself of a rare and deadly blood disease by renting movie comedies and reading humorous books. My favorites are the Dilbert books.

The reverse is true. If you are under stress at work or at home, that's going to knock down your immune system and you're going to be much more susceptible to health problems. Like cancer, heart attacks, stroke, and so on.

Continued on page 64

Wise Up!

Here are some of my books which can change your life (if you'll let 'em). If the idea of being healthy, wealthy and wise interests you, start reading. Yes, you can be all that, but only when you know the secrets which I've spent a lifetime uncovering.

.....Wayne

The Secret Guide to Health: Yes, there really is a secret to regaining your health and adding 30 to 60 years of healthy living to your life. The answer is simple, but it means making some serious lifestyle changes. Will you be skiing the slopes of Aspen with me when you're 90 or doddering around a nursing home? Or pushing up daisies? No, I'm not selling any health products, but I can help you cure yourself of cancer, heart trouble, or any other illness. Get this new, 2001 expanded edition (156p). $10 (#05)

The Secret Guide to Wealth: Just as with health, you'll find that you have been brainwashed by "the system" into a pattern of life that will keep you from ever making much money and having the freedom to travel and do what you want. I explain how anyone can get a dream job with no college, no résumé, and even without any experience. I explain how you can get someone to happily pay you to learn what you need to know to start your own business. $5 (#03)

The Secret Guide to Wisdom: This is a review of around a hundred books that will boggle your mind and help you change your life. No, I don't sell these books. They're on a wide range of subjects and will help to make you a very interesting person. Wait'll you see some of the gems you've missed reading. You'll have plenty of fascinating stuff to talk about on the air. $5 (#02)

The Bioelectrifier Handbook: This explains how to build or buy ($155) a little electrical gadget that can help clean your blood of any virus, microbe, parasite, fungus or yeast. The process was discovered by scientists at the Albert Einstein College of Medicine, quickly patented, and hushed up. It's curing AIDS, hepatitis C, and a bunch of other serious illnesses. It's working miracles! The circuit can be built for under $20 from the instructions in the book. $10 (#01)

My WWII Submarine Adventures: Yes, I spent from 1943-1945 on a submarine, right in the middle of the war with Japan. We almost got sunk several times, and twice I was in the right place at the right time to save the boat. What's it really like to be depth charged? And what's the daily life aboard a submarine like? How about the Amelia Earhart inside story?If you're near Mobile, please visit the Drum. $5 (#10)

Wayne's Caribbean Adventures: My super budget travel stories – where I visit the hams and scuba dive most of the islands of the Caribbean. You'll love the special Liat fare which let me visit 11 countries in 21 days, diving all but one of the islands, Guadeloupe, where the hams kept me too busy with parties. $5 (#12)

Cold Fusion Overview: This is both a brief history of cold fusion, which I predict will be one of the largest industries in the world in the 21st century, plus a simple explanation of how and why it works. This new field is going to generate a whole new bunch of billionaires, just as the personal computer industry did. $5 (#20)

Cold Fusion Journal: They laughed when I predicted the PC industry growth in 1975. PCs are now the third largest industry in the world. The cold fusion ground floor is still wide open, but then that might mean giving up watching ball games. Sample: $10 (#22).

Julian Schwinger: A Nobel laureate's talk about cold fusion—confirming its validity. $2 (#24)

Improving State Government: Here are 24 ways that state governments can cut expenses enormously, while providing far better service. I explain how any government bureau or department can be gotten to cut it's expenses by at least 50% in three years and do it cooperatively and enthusiastically. I explain how, by applying a new technology, the state can make it possible to provide all needed services without having to levy *any* taxes at all! Read the book, run for your legislature, and let's get busy making this country work like its founders wanted it to. Don't leave this for "someone else" to do. $5 (#30)

Mankind's Extinction Predictions: If any one of the experts who have written books predicting a soon-to-come catastrophe which will virtually wipe most of us out are right, we're in trouble. In this book I explain about the various disaster scenarios, like Nostradamus, who says the poles will soon shift (as they have several times in the past), wiping out 97% of mankind. Okay, so he's made a long string of past lucky guesses. The worst part of these predictions is the accuracy record of some of the experts. Will it be a pole shift, a new ice age, a massive solar flare, a comet or asteroid, a bioterrorist attack? I'm getting ready, how about you? $5 (#31)

Moondoggle: After reading René's book, *NASA Mooned America*, I read everything I could find on our Moon landings. I watched the NASA videos, looked carefully at the photos, read the astronaut's biographies, and talked with some readers who worked for NASA. This book cites 45 good reasons I believe the whole Apollo program had to have been faked. $5 (#32)

Classical Music Guide: A list of 100 CDs which will provide you with an outstanding collection of the finest classical music ever written. This is what you need to help you reduce stress. Classical music also raises youngster's IQs, helps plants grow faster, and will make you healthier. Just wait'll you hear some of Gotschalk's fabulous music! $5 (#33)

The Radar Coverup: Is police radar dangerous? Ross Adey K6UI, a world authority, confirms the dangers of radio and magnetic fields, including our HTs and cell phones. $3 (#34)

Three Gatto Talks: A prize-winning teacher explains what's wrong with American schools and why our kids are not being educated. Why are Swedish youngsters, who start school at 7 years of age, leaving our kids in the dust? Our kids are intentionally being dumbed down by our school system — the least effective and most expensive in the world. $5 (#35)

Aspartame: a.k.a. NutraSweet, the stuff in diet drinks, etc., can cause all kinds of serious health problems. Multiple sclerosis, for one. Read all about it, two pamphlets for a buck. (#38)

$1 Million Sales Video: The secret of how you can generate an extra million dollars in sales just by using PR. This will be one of the best investments you or your business will ever make. $40 (#52)

Reprints of My Editorials from *73*. Very few things in this world are as we've been taught, and as they appear. I blow the whistle on the scams around us, such as the health care, our school system, our money, the drug war, a college education, sugar, the food giants, our unhealthy food, fluorides, EMFs, NutraSweet, etc.

1996 Editorials: 120 pages, 100 choice editorials. $10 (#72)

1997 Editorials: 148 fun-packed pages. 216 editorials. $10 (#74)

1998 Editorials: 168 pages that'll give you lots of controversial things to talk about on the air. $10 (#75)

1999 Editorials: 132 pages of ideas, book reviews, health, education, and anything else I think you ought to know about. $10 (#76)

2000 Editorials: 76 pages (thinner magazine as a result of our slowly dying hobby). $5 (#77)

Silver Wire: With two 5-in. pieces of heavy pure silver wire + three 9V batteries you can make a thousand dollars worth of silver colloid. What do you do with it? It does what the antibiotics do, but germs can't adapt to it. Use it to get rid of germs on food, for skin fungus, warts, and even to drink. Read some books on the uses of silver colloid, it's like magic. $15 (#80)

Colloid Reprint. April 97 article on a silver colloid maker, history, and how to use the stuff. $5 (#98).

Colloid Kit. Three 9V battery clips, 2 aligator clips & instructions. $5 (#99).

Wayne's Bell Saver Kit. The cable and instructions enabling you to inexpensively tape Art Bell W6OBB's nightly 5-hr radio talk show. $5 (#83)

NH Reform Party Keynote Speech. It wow'd 'em when I laid out plans for NH in 2020, with much better, yet lower cost schools, zero state taxes, far better health care, a more responsive state government, etc. $1 (#85)

Stuff I didn't write, but you need:

NASA Mooned America: René makes an air-tight case that NASA faked the Moon landings. This book will convince even you. $30 (#90)

Last Skeptic of Science: This is René's book where he debunks a bunch of accepted scientific beliefs – such as the ice ages, the Earth being a magnet, the Moon causing the tides, and etc. $30 (#91)

Dark Moon: 568 pages of carefully researched proof that the Apollo Moon landings were a hoax—a capping blow for René's skeptics. $35 (#92)

Dark Moon Video:222-minute exposé nailing NASA with their own photos. If you've watched the NASA films of the astronauts walking on the Moon you wondered at their weird gate. Wait'll you see it speeded up. It looks exactly like they're running on Earth! They catch NASA in dozens of give aways that the photos and films had to have been faked. $46 (#93)

Travel Diaries: You can travel amazingly inexpensively – once you know the ropes.Enjoy Sherry and my budget visits to Europe, Russia, and a bunch of other interesting places. How about a first class flight to Munich, a rented Audi, driving to visit Vienna, Krakow in Poland (and the famous salt mines), Prague, back to Munich, and the first class flight home for two, all for under $1,000. Yes, when you know how you can travel inexpensively, and still stay in first class hotels. $5 (#11)

73 Writer's Guide: It's easy, fun, can pad your résumé, and impress the hell out of your friends. $0 (#78)

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The *73* Flea Market, Barter 'n' Buy, costs you peanuts (almost)— comes to 35 cents a word for individual (noncommercial!) ads and $1.00 a word for commercial ads. Don't plan on telling a long story. Use abbreviations, cram it in. But be honest. There are plenty of hams who love to fix things, so if it doesn't work, say so.

Make your list, count the words, including your call, address and phone number. Include a check or your credit card number and expiration. If you're placing a commercial ad, include an additional phone number, separate from your ad.

This is a monthly magazine, not a daily newspaper, so figure a couple months before the action starts; then be prepared. If you get too many calls, you priced it low. If you don't get many calls, too high.

So get busy. Blow the dust off, check everything out, make sure it still works right and maybe you can help make a ham newcomer or retired old timer happy with that rig you're not using now. Or you might get busy on your computer and put together a list of small gear/parts to send to those interested?

Send your ads and payment to: *73 Magazine*, Barter 'n' Buy, 70 Hancock Rd., Peterborough NH 03458 and get set for the phone calls. The deadline for the August 2001 classified ad section is June 10, 2001.

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NEVER SAY DIE

continued from page 62

So, get out there and enjoy the sunsets. Laugh at Jackie Chan and his choreographed martial arts antics. Let it out when you read the Dilbert cartoons. Check the humor section of my *Secret Guide to Wisdom.*

I laugh a lot. If you've ever heard me on with Art Bell you know that I laugh all through the show.

Summer!

Magazine deadlines being what they are, I'm writing this in mid-April. The snow in the front yard is down to a foot deep from six feet just a few days ago. It's mud season on the road going by the farm. But it won't be long before I'll be snapping digital pictures of the twenty-plus varieties of wildflowers in the north pasture. I plan to post them on my Web site (www.waynegreen.com) for readers who live too far away to walk the pasture with me enjoy the incredible beauty. One week, it's zillions of buttercups. A couple weeks later, it's millions of daisies. Bring your wildflower book and a camera. 73

Simultaneous Reception

V HF/V HF | U HF/U HF | V HF/U HF

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FEATURES

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*Simultaneous reception on two different Frequencies, in-band or Cross-Band. Cross-band Repeater Function not available.

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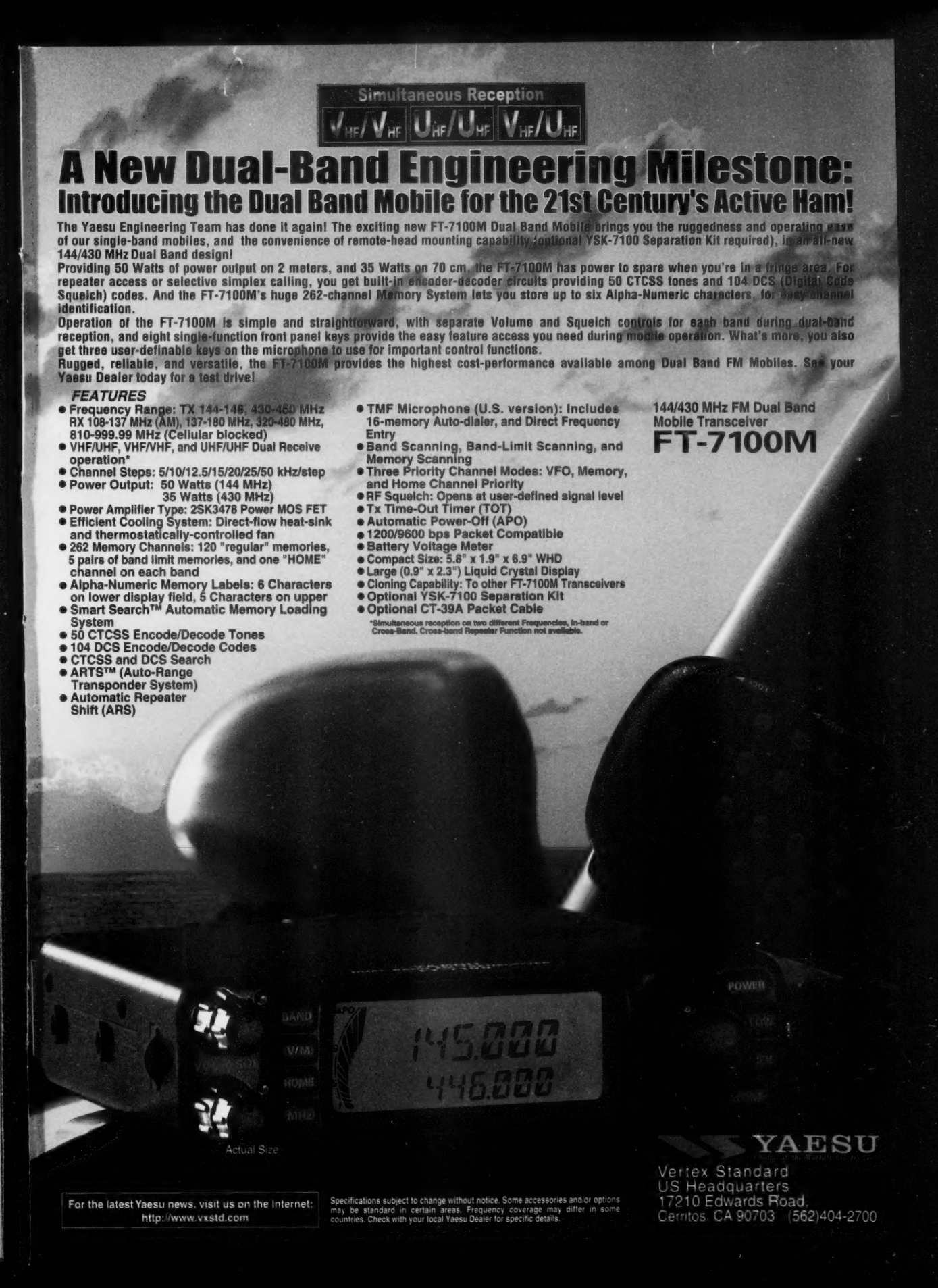
FT-7100M



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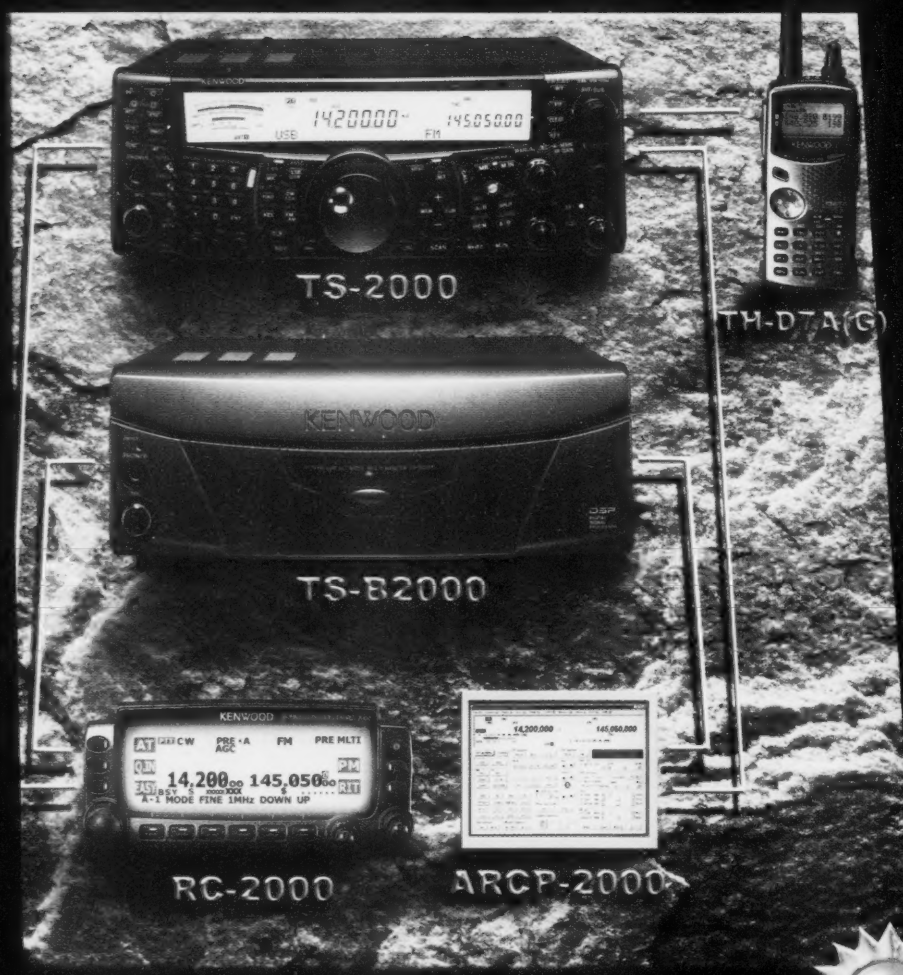

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Cross Band/ Cross Mode Operation
Satellite Functions
1.2 GHz Optional Band

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DX Packet Cluster AutoTune
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Satellite Functions
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